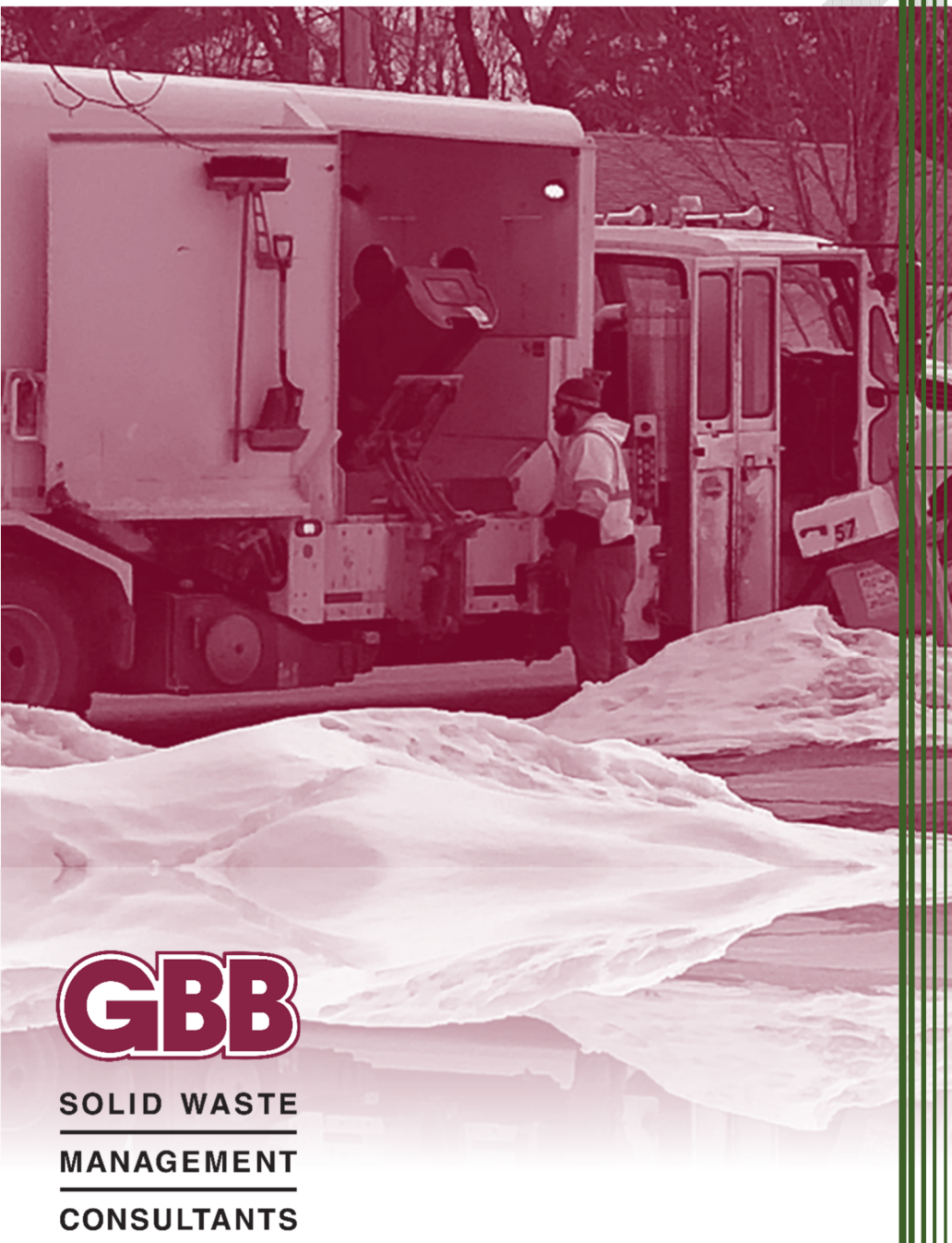




Feasibility Study for Residential Solid Waste Collection Contracts

February 3, 2020



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1. Executive Summary

In January 2019, the Chittenden Solid Waste District (“District” or “CSWD”), on behalf of the City of Burlington and City of South Burlington, contracted Gershman, Brickner & Bratton, Inc. (GBB) and sub-contractors C2Logix, LLC and ShapardResearch (altogether “GBB Team”) to undertake a feasibility study, including a household survey, to assess the viability of consolidating residential trash, recycling, and food scraps collection services.

Consolidated residential curbside collection provided by a municipality is a standard service method for solid waste collection in the United States, particularly among communities that have access to residential curbside recycling service. In the report, *2015-2016 Centralized Study on Availability of Recycling*, prepared by RRS and Moore Recycling Associates, researchers found that 73% of households in the United States had access to curbside recycling services in 2015. Of these households, 81% were served by the municipality directly or private haulers under contract with the municipality. In contrast, residential households that contract with private haulers independently, such as the models currently implemented in the Cities of Burlington and South Burlington, are in the minority at 19%.

Project Survey

For the resident survey and collection modeling, the GBB Team used the definition of a household to be 1-4-unit properties and worked collaboratively to develop a survey instrument to meet the objectives of the project. Key Project Survey observations include:

- **Service subscriptions:** Approximately three-quarters of respondents reported using subscription based curbside collection services at present. The GBB Team assumes that in a consolidated model, with more service packages available, some of the residents who are now only using drop-off and do not have a curbside collection subscription, would be converted to curbside customers.
- **Bulky waste:** Residents seem to have relatively few bulky items of which to dispose, and those that do mostly self-haul or otherwise manage it themselves.
- **Food waste:** Most respondents had a positive opinion of the idea to add food waste collection for composting to their waste management services.
- **Yard waste:** Most of the yard waste generated in Burlington and South Burlington is currently managed on site or already being removed by the resident or their landscaper. Very few residents said that they had yard trimmings collection right now.
- **Cost:** The GBB team concludes that there are cost savings for residents of Burlington and South Burlington in a consolidated model due to the current route inefficiencies.

See Section 4 - [Public Input & Project Survey](#) - of this report for more information.

Collection Scenarios

For both Burlington and South Burlington, a base case and five (5) variations on collection frequency and service items were modeled. Note that current gate rates in Chittenden County were used for collection routing pricing estimates. It is assumed that negotiated rates may be more favorable to the rate payer.

The customer rate ranges that are estimated for consolidated collection present a significant reduction based on the current rate ranges reported in Table 1 and echoed in the Project Survey. This is an indication of the inefficiencies of having multiple service providers in the same service areas.

Cost Savings

There are significant potential cost savings to the solid waste collection systems of the City of Burlington and the City of South Burlington if a consolidated collection is implemented for all residents, using bi-weekly/EOW solid waste and recycling as the comparative service level:

- City of Burlington: The annual system cost savings could be between \$710K and \$2.9M.¹
- City of South Burlington: The annual system cost savings could be between \$329K and \$1.4M.²

From the Project Survey respondents, three (3) haulers served 75% of the residential units of the cities; however, none served greater than 50%. From this finding, the GBB Team assumed that the three primary haulers are covering nearly all route miles within the cities in order to service their market share at present.

The GBB Team did not have existing routes from the haulers to compare to the results of the routing scenarios; however typically communities can see on average 15-25% improvement in efficiency after balancing routes (assuming that the collection was made by a service provider that never routed the whole community before). Beyond the impact from route optimization, in the case of Burlington and South Burlington, it can be estimated that a consolidated collection system could result in a higher two-thirds reduction in current route miles traveled for solid waste collection since only one hauler per district will be covering nearly all route miles compared to the three service providers currently covering both cities. Based on the proposed reduction in miles traveled, the Cities' could see savings up to two-thirds in greenhouse gas emissions.

See Section 5 - [Collection Routing](#) - of this report for more information.

Recommendations for Consolidated Residential Collection System

Based on the analysis herein, the GBB Team recommends the following for a consolidated residential collection system in the Cities of Burlington and South Burlington.

Recommendation 1: The Cities should consider negotiating disposal agreements for the solid waste collected from the City of Burlington and the City of South Burlington with Casella Waste for the solid waste delivered to the Casella Waste Transfer Station by each City.

***Rationale:** The negotiation and finalization of the disposal agreements will ensure that Casella Waste does not have a competitive advantage over the other waste haulers who may be submitting proposals in response to the Request for Proposals (RFP) process. Casella Waste operates the only solid waste transfer station located in the District and the finalized disposal agreements would ensure a level playing field for all waste companies which might submit proposals.*

Recommendation 2: The City of Burlington and the City of South Burlington should consider being billed directly by CSWD for the processing of the single-stream recyclables collected from each City and have the selected contractor(s) only charge for collection services.

¹ Burlington annual system costs would increase an estimated additional \$117K for implementing a consolidated collection with a 15% opt out maximum.

² Savings would decrease by an estimated \$158K by implementing a consolidated collection system with a 15% opt out maximum.

Rationale: The direct billing of the Cities by CSWD will eliminate the market risk which the haulers who participate in the RFP process would be required to absorb over the course of a 7 to 10-year contract and encourage increased participation in the RFP process. This arrangement would also ensure that costs associated with the MRF tipping fees will be charged directly to the Cities. In addition, CSWD and the Cities of Burlington and South Burlington would be able to establish a mechanism to revise the tipping fees on a quarterly or annual basis in order to adjust for changes in market conditions associated with the resale value of the recycled materials.

Recommendation 3: The City of Burlington and the City of South Burlington should consider requesting pricing via a RFP for all customers at requested service levels, as well as a contractual opt-out maximum of 15% of households. It is recommended that the RFP process request rates for the below service options from potential contractors:

- Weekly solid waste and recyclables collection
- Weekly solid waste and every-other-week recyclables collection.
- Every-other-week solid waste recyclables collection.
- Weekly food scrap waste collection.
- Back-door service for each of the above solid waste and recyclables collection options.

It is also recommended that residents be provided with the option to opt-out from the weekly food scrap waste collection service, however, the cities will most likely need to make a similar minimum participation rate guarantee to the selected contractor in order to ensure the needed service efficiencies and obtain cost-effective pricing for the service.

Rationale: As modeled in the scenarios, a contractual opt-out maximum of 15% of households can encourage increased participation in the RFP process by ensuring revenue and cost stability for the service providers submitting proposals in response to the RFP. Requesting pricing for an all customers service option and a 15% opt-out maximum service option will ensure the Cities can make the most informed decision for service delivery to the citizens. It is recommended that residents be provided with the option to opt out from all of the above solid waste and recyclables collection service options, however, in order to provide potential contractors a basis for preparing their proposals the cities will need to agree to commit to paying the contractors a minimum participation rate of 85% in the event the opt-out component exceeds 15% in order to secure favorable service rate structures as part of the final executed contract.

Recommendation 4: It is recommended that the RFP packages be prepared based on the two cities billing residents directly through their current utility billing system.

Rationale: With this arrangement, any proposals submitted by solid waste companies responding to the RFP process should be more cost effective because they will not have to accept any accounts receivable risk associated with the collection contracts. The City of Burlington will also be able to use this process to eliminate its current system of charging all residents a solid waste fee of \$4.20 per month, which is collected by the haulers from residents and subsequently reimbursed to the City.

Recommendation 5: It is recommended that the term of the collection contracts be seven (7) years with one (1) three-year option exercised at the discretion of the Cities.

Rationale: The initial 7-year term of the contract will ensure that the companies which submit proposals will be able to obtain an adequate return on investment for the collection vehicles and equipment they must acquire to perform the collection contracts. The one (1) three-year contract option is also likely the most administratively efficient process for the Cities to amend and extend from the base term of the collection contracts.

Recommendation 6: It is recommended that CSWD take into consideration the possible expansion of the capacity of its food waste/composting facility should the collection of residential food waste be included as part of the RFP process.

Rationale: The availability of sufficient food waste recycling/disposal capacity within the District will be necessary to ensure the adequate performance of the food waste collection component of the collection contracts.

Recommendation 7: It is recommended that the Cities of Burlington and South Burlington issue separate RFP's for collection services.

Rationale: This will provide each City with sufficient flexibility to decide if they wish to proceed with finalizing the collection contracts following the completion of the RFP process.

Recommendation 8: In an effort to provide an opportunity for smaller solid waste collection companies to participate in the contract(s) for solid waste and recycling collection services which may be finalized for the Cities of Burlington and South Burlington, it is recommended that the RFP process allow for some of the specialty services such as bulk, back door and food scraps collection services be provided separately from the contracts issued for servicing all of the single-family residential units in each City. In addition, the Cities may wish to consider setting aside for small collection companies the solid waste and recycling collection services for the municipal office and facility locations throughout each city. These types of services may be better aligned with the capabilities and resources of the smaller companies.

It is recommended that the City of Burlington and the City of South Burlington review this concept, prior to proceeding, in detail with their Legal and Procurement Departments to ensure that the concept is consistent with all applicable legal requirements and established procurement policies.

Rationale: This will provide each City with sufficient flexibility to meet the needs of its residents based on a contracted price. It would be most administratively efficient for the Cities to directly bill the residents for the backdoor collection services and the residents to arrange for the on-call bulk waste collection services directly with the collection contractors and be billed directly by the contractors.

Billing

GBB recommends that both Cities discuss the method of billing internally with the Department(s) which conduct the billing services in order to estimate the additional costs and identify any items which would impact the implementation of the billing by the Cities for waste and recyclables collection services. GBB would be able to assist with such discussions and provide guidance concerning the matter to ensure a better understanding of the needed billing services. The decision regarding billing by the haulers or by the cities would then be incorporated into a future contract process, should the cities decide to move forward with a consolidation system.

See Section 5 - [Comparative Analysis of Current Utility Bills](#) - of this report for more information.

Next Steps

The immediate next step is a presentation is made to the City Councils including input from the survey and the public meetings. The Councils will decide if they want to do further study, move forward on implementation, or end consideration.

If a decision were reached to move forward on consolidated collection implementation for both cities, an additional 9-12 months of implementation assistance would be required to prepare technical and contract specifications to bid for services, evaluate the bids received, and make recommendations for award for each contract based on the qualifications of the bidders as well as the most favorable financial outcome. In addition, the cities may wish to contract for additional services to assist with the startup of the collection contracts in order to minimize any implementation and service difficulties during the initial thirty (30) days of the collection contracts.

2. Introduction to the Project

In January 2019, the Chittenden Solid Waste District (“District” or “CSWD”), on behalf of the City of Burlington and City of South Burlington, contracted Gershman, Brickner & Bratton, Inc. (GBB) and sub-contractors C2Logix, LLC and ShapardResearch (altogether “GBB Team”), to undertake a feasibility study, including a household survey, to assess the viability of consolidating residential trash, recycling, and food scraps collection services.

The District’s RFP listed the stated objectives of possible consolidated collection to the cities of Burlington and South Burlington as:

1. Reduced costs to residents and haulers through more efficient collection routes;
2. Reduced environmental costs of excess truck traffic;
3. Reduced infrastructure impacts of excess truck traffic;
4. Increased recycling through direct and consistent education to residents;
5. Reduced litter and increased recycling using wheeled carts by all residents.;
6. Increased diversion by using consolidated collection as the most cost-effective mechanism to add collection of food scraps;
7. Increased safety on local roads;
8. Reduced noise in neighborhoods and
9. Better compliance with state and local mandates.

Over the years, CSWD has investigated various new initiatives for its members. In 2012, a review was conducted of opportunities for implementing controlled District-wide residential and commercial collection services different from the long-standing tradition of open market collection services by private haulers coupled with self-hauling to the network of drop-off facilities. In 2014, the District also investigated implementing the costs of a District-wide residential organics collections program using changes to various household trash and recyclables services scenarios. This current collection contract effort with the GBB Team is being driven by the Cities of Burlington and South Burlington. Since the last evaluation of possible District-wide collection, renewed interest has been generated for the consolidation of services.

Please refer to Appendix I for trip report photos from the kickoff trip which initiated the project in March 2019.

National Context

Consolidated residential curbside collection provided by a municipality is a standard service method for solid waste collection in the United States, particularly among communities that have access to residential curbside recycling service. In the report, *2015-2016 Centralized Study on Availability of Recycling*, prepared by RRS and Moore Recycling Associates, researchers found that 73% of households in the United States had access to curbside recycling services in 2015. Of these households, 81% were served by the municipality directly or by private haulers under contract with the municipality. In contrast, residential households that contract with private haulers independently, such as the models currently implemented in the Cities of Burlington and South Burlington, are in the minority at 19%.

GBB has also performed benchmarking research on United States residential curbside collection programs in 2015. Of the 461 cities and counties that were studied, 83% of the cities provided residential curbside

collection directly through the municipalities or by private haulers under contract, while private subscription serviced 11% of the cities. The remaining 6% of the cities employed both service methods for residential curbside collections. The County of Frederick, Maryland, for example, provided curbside recycling collection services to the incorporated areas of the jurisdiction through municipalities while the unincorporated areas were serviced by subscription-based programs. Additionally, in an earlier study, *2008 American Beverage Association Community Survey*, prepared by R.W. Beck, found that 74% of households in the United States had access to curbside recycling services in 2008. Of these communities, 85% were served by the municipality or private haulers under contract, and 15% were served by private subscription programs.³

3. Definition of Household

Definition of Household

In the solid waste management industry, the term “household” generally refers to single-family homes (1 unit) and “smallplexes” which typically consists of 2-4-units each. GBB recommends that the Cities of Burlington and South Burlington consider only including 1-4-unit properties in their consolidated collection system to align with national norms given that properties of this size can use carts and be serviced in the same collection route.

As further presented in Section 5, consolidated routing scenarios were modeled for the Cities of Burlington and South Burlington. Should the decision to go forward with consolidated collection be made in one or both Cities, a variety of service options should be offered to accommodate the variety of housing types and the customer preferences in both communities.

4. Public Input & Project Survey

Overview

The GBB Team worked collaboratively to develop a survey instrument to meet the objectives of the project. In addition to basic demographic questions, the team focused on subject matter areas about which additional information would inform the feasibility study. Twenty-eight (28) questions were administered by conducting a dual frame of Random Digit Dialed landlines and cell phones to adults (age 18 and older) living in the Cities of Burlington and South Burlington. Cell phones were included due to the increasing percentage of the population that is transitioning to cell phone-only-households.

Random Digit Dialed number selection starts with identifying all telephone exchanges that serve the desired region. After identifying the prefixes to be targeted, non-working and business blocks of numbers

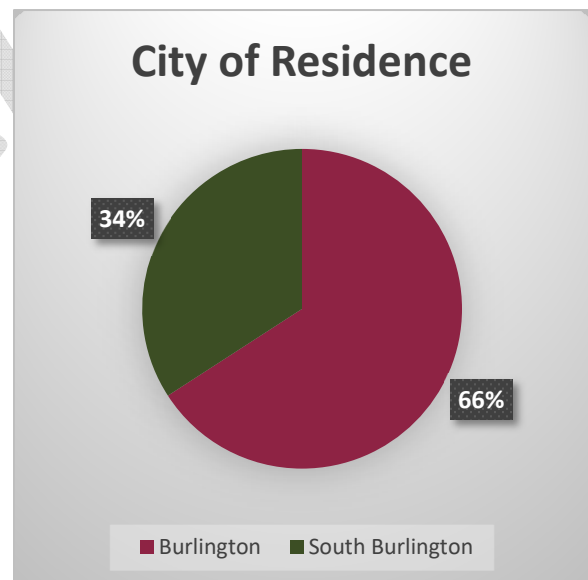


Figure 1: Demographic information of the participants in the survey – City of Residence

³ R.W.Beck.2008 American Beverage Association Community Survey. September 2009. <https://tinyurl.com/w6sxxlv>

are eliminated. After valid blocks of numbers are weighted proportionally by the number of listed phone lines, the surveyor systematically selects numbers to yield a probability sample of base numbers. Finally, random digits are added to the base number to create a random ten-digit telephone number. This same process is used for cell phones. The two samples are then blended to reflect the population at large. The data is purchased from a data firm called SSI, the world leader in Random Digit Dialed number sampling of this nature.

There were 407 verified surveys were completed and analyzed. Of those, 65.8% came from residents of Burlington, and 34.2% came from residents in South Burlington. The survey results were prepared with a confidence rating of 95%, with a margin of error of $\pm 4.68\%$. Data collection was conducted from June 3 and June 24, 2019. All responses were collected via live callers, and all were collected from residents in the Cities of Burlington and South Burlington in Chittenden County, VT.

The data collection was conducted by telephone using Computer-aided Telephone Interviewing (CATI) technology. A field director oversaw monitoring the samples, verifying interviews, and providing feedback to interviewers. Each of the interviewers received extensive training and practiced interviewing sessions before working on any project. Before calling began, every member of the data collection team was familiarized with the overall study objectives, interviewing techniques, and the survey instrument.

Survey Analysis

After the data collection process was complete, and a respondent audit had been verified, the results were stratified with multiple variants, using the U.S. Census and other sources deemed appropriate to this project. There were a few demographics that could not be weighted due to lack of stratas available for the entire population:

- **The number of apartments in the respondent's complex**
The way the Census Bureau classifies this and the way they were grouped in the study are not parallel, and responses could not be manipulated based on current data available.
- **Years lived in Chittenden County**
The way the Census Bureau classifies this and the way they were grouped in the study are not parallel, and responses could not be manipulated based on current data available.
- **Income**
30% of the respondents refused to answer this question. That is too much missing data to apply any accurate weight.

For the Burlington sample of 261, ShapardResearch weighted the results by level of education and type of household. It is not necessary to apply a weight to whether the resident rents or owns, number of residents in the household, or gender because these attributes already have a factor of 1. This means that applying a further weight would not change the outcome as it is already representative of the census stratification. Stratifications for this portion were calculated from census numbers of the City of Burlington, only.

For the South Burlington sample of 143, ShapardResearch weighted the results by level of education, whether the resident rents or owns their property, type of household, and gender. The number of residents in the household did not need to be weighted, as the unweighted results are already

representative of census totals. Stratifications for this portion were calculated from census numbers of the city of South Burlington, only.

All weights were applied using a layering format, meaning that the weights are applied one demographic at a time. Once the first weight is representative, the next weight is calculated and applied, and so on.

Please refer to the Reports attached from ShapardResearch that include the weighted data, in:

- Appendix III – ShapardResearch Project Survey Results (full): City of Burlington, and
- Appendix IV – ShapardResearch Project Survey Results (full): City of South Burlington

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4.1.1 Results and Analysis⁴

4.1.1.1 Demographics

The figures on the following pages show the demographic information of the survey participants.

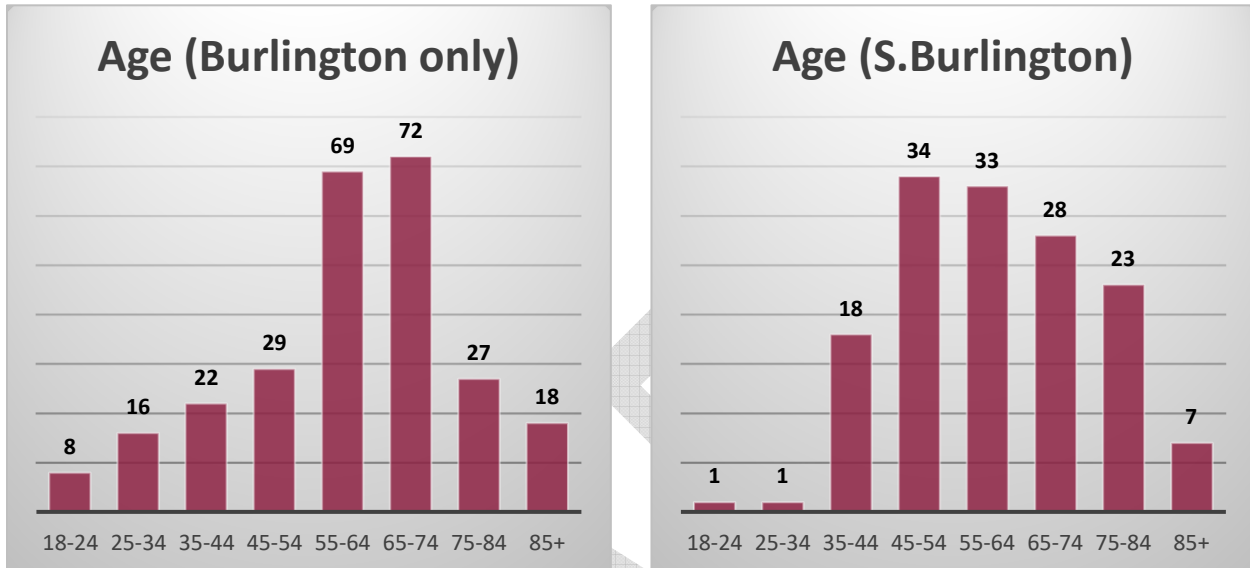


Figure 2: Demographic information of the participants in the survey – Age

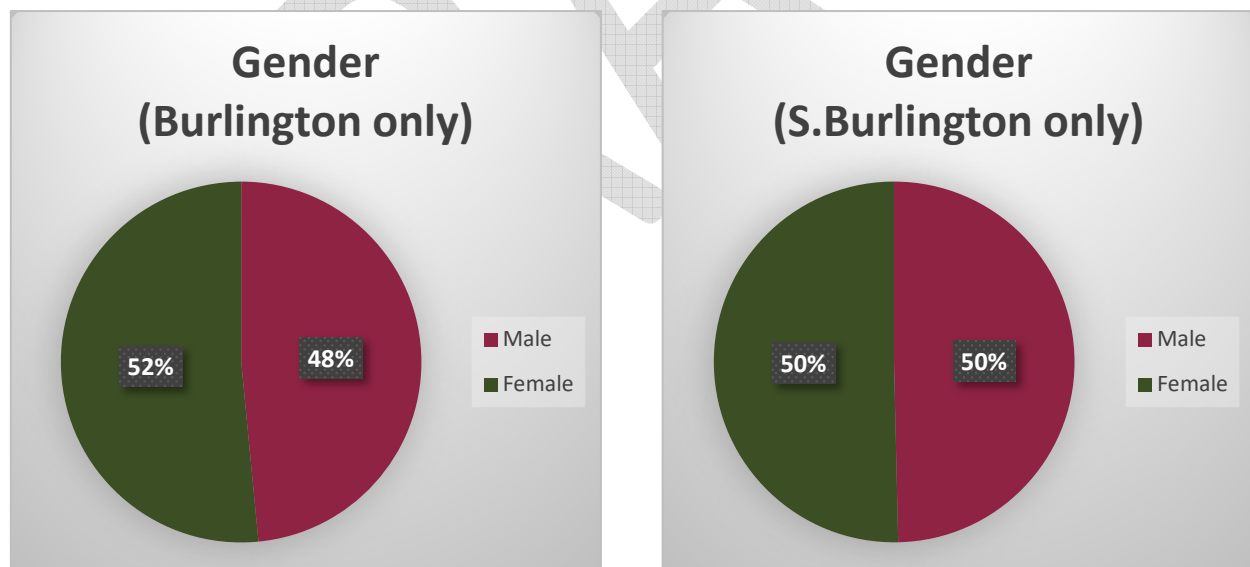


Figure 3: Demographic information of the participants in the survey – Gender

⁴ Notes are provided throughout this section on the results of Pearson's Chi Square Tests, which measure to what degree of certainty the results of the survey can be used predictively to estimate what the responses would be from a perfectly distributed population of Burlington and South Burlington.

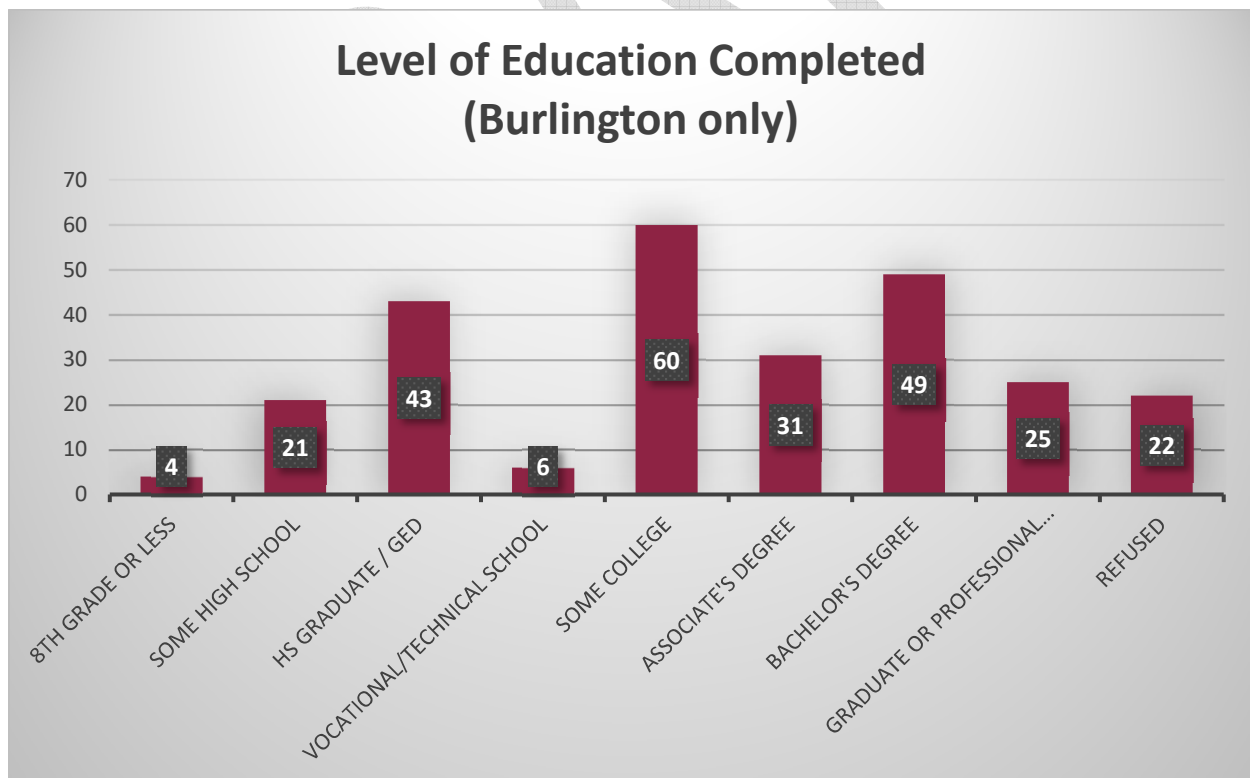
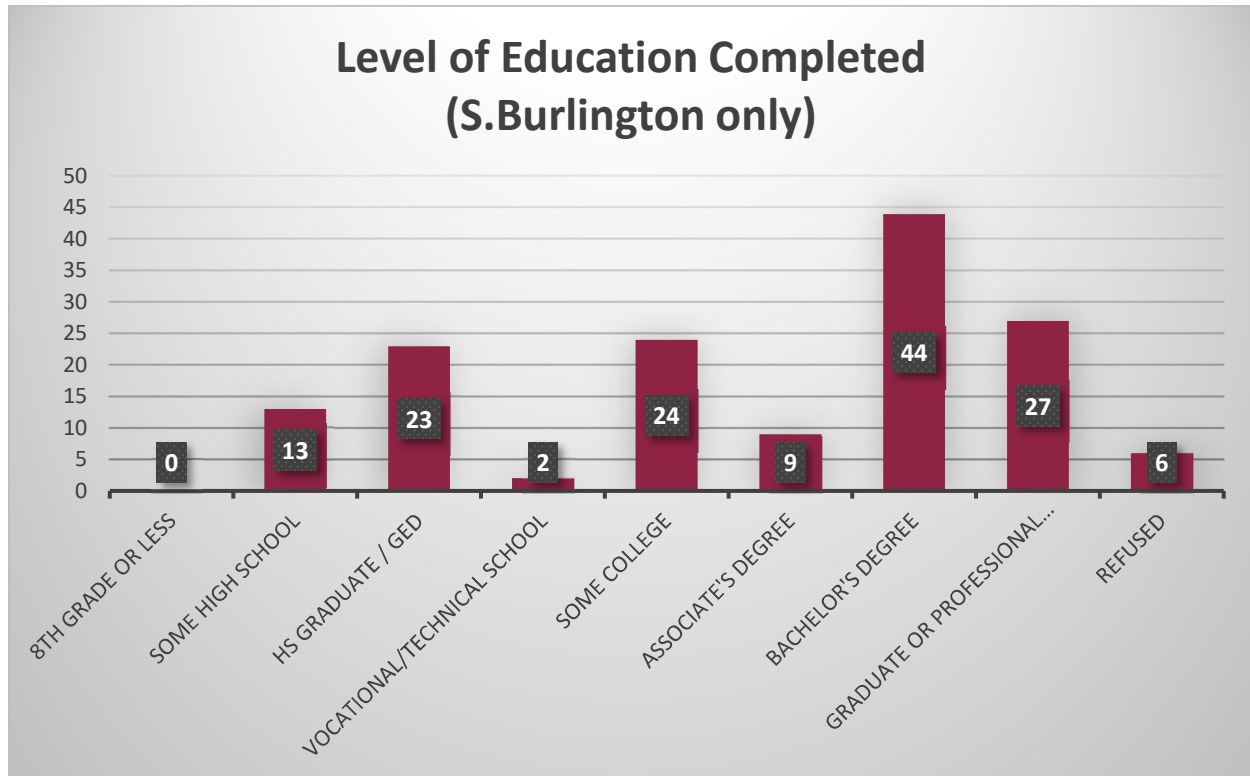
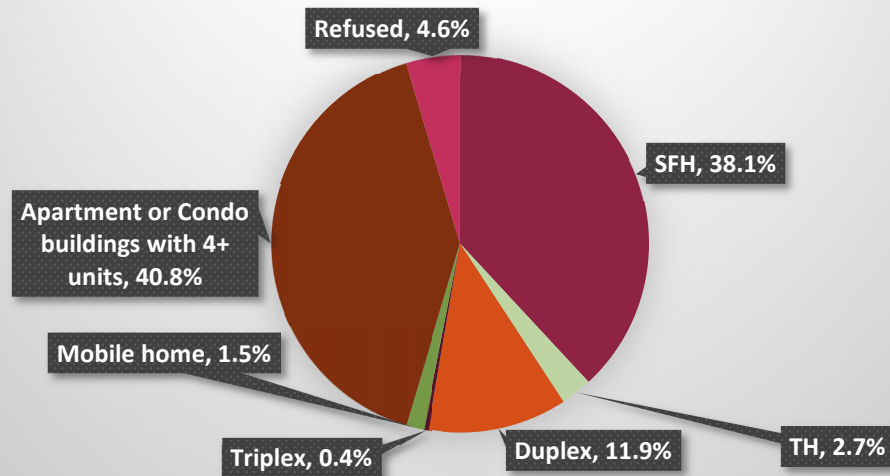


Figure 4: Demographic information of the participants in the survey – Level of Education Completed

Residence Type (Burlington only)



Residence Type (S. Burlington only)

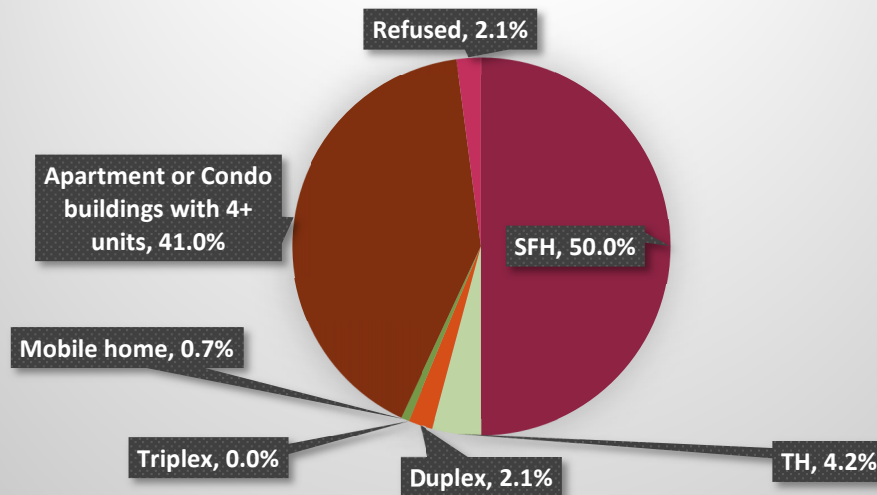


Figure 5: Demographic information of the participants in the survey – Residence Type

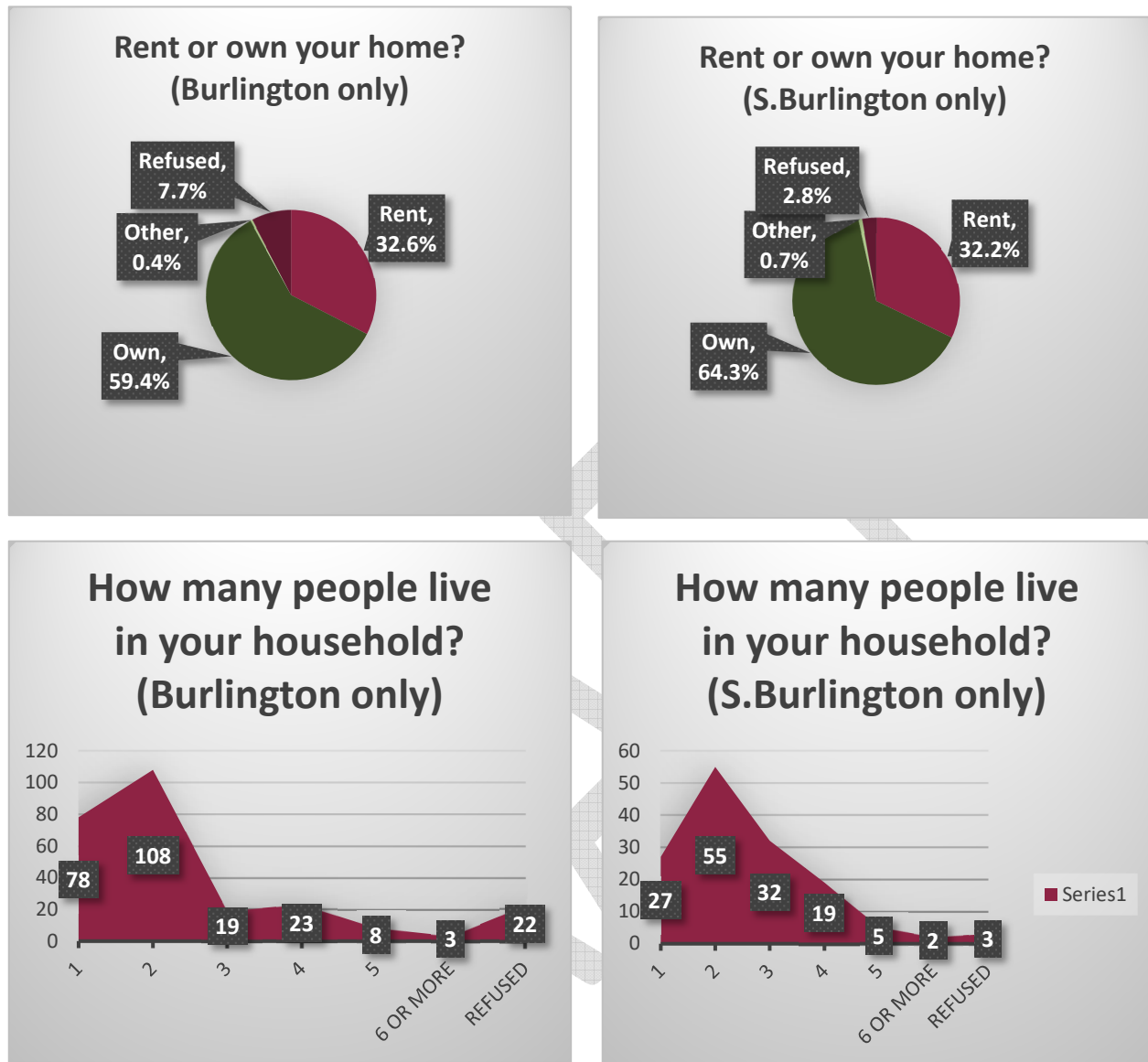


Figure 6: Demographic information of the participants in the survey – Status and Size

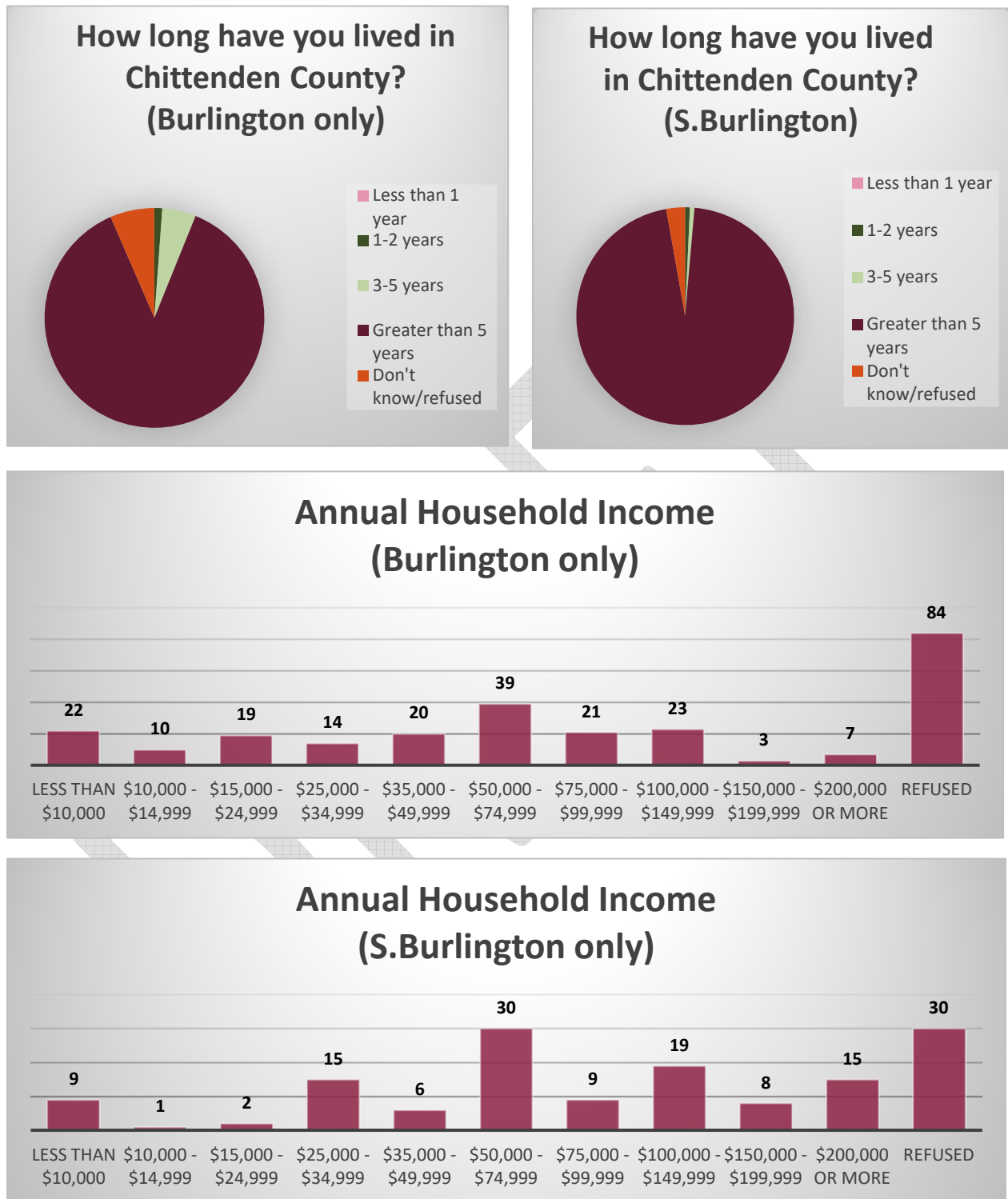


Figure 7: Demographic information of the stratified participants in the survey – Residency & Income

Figure 8 below displays participant experience with curbside collection services.

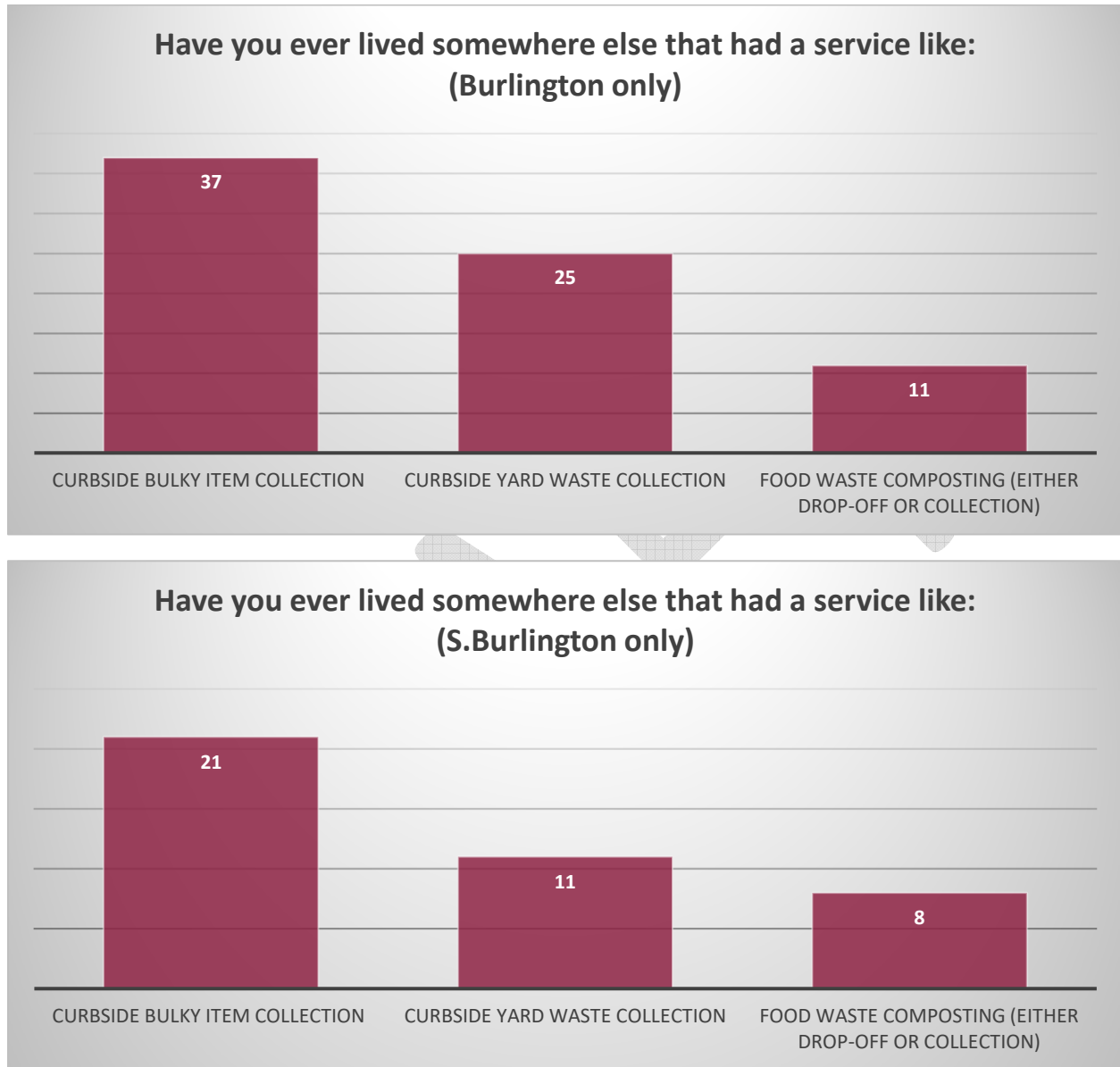


Figure 8: Participant Experience with Curbside Collection Services

4.1.1.2 Waste Destination and Collection

Figure 9 displays participant understanding of Waste Disposal Locations. Of the Burlington respondents, 73.9% have a hauler who picks up their trash and recycling, and 14.6% take their trash and recyclables to a drop-off location, also know colloquially as “the dump”. An additional 7.3% said they have a hauler for curbside collection, but they also sometimes take trash and recyclables to a drop-off location.⁵ Of the South Burlington respondents, 75% have a hauler who picks up their trash and recycling, and 17.4% take their trash and recyclables to a drop-off location. An additional 0.7% said they have a hauler for curbside collection, but they also sometimes take trash and recyclables to a drop-off location.⁶

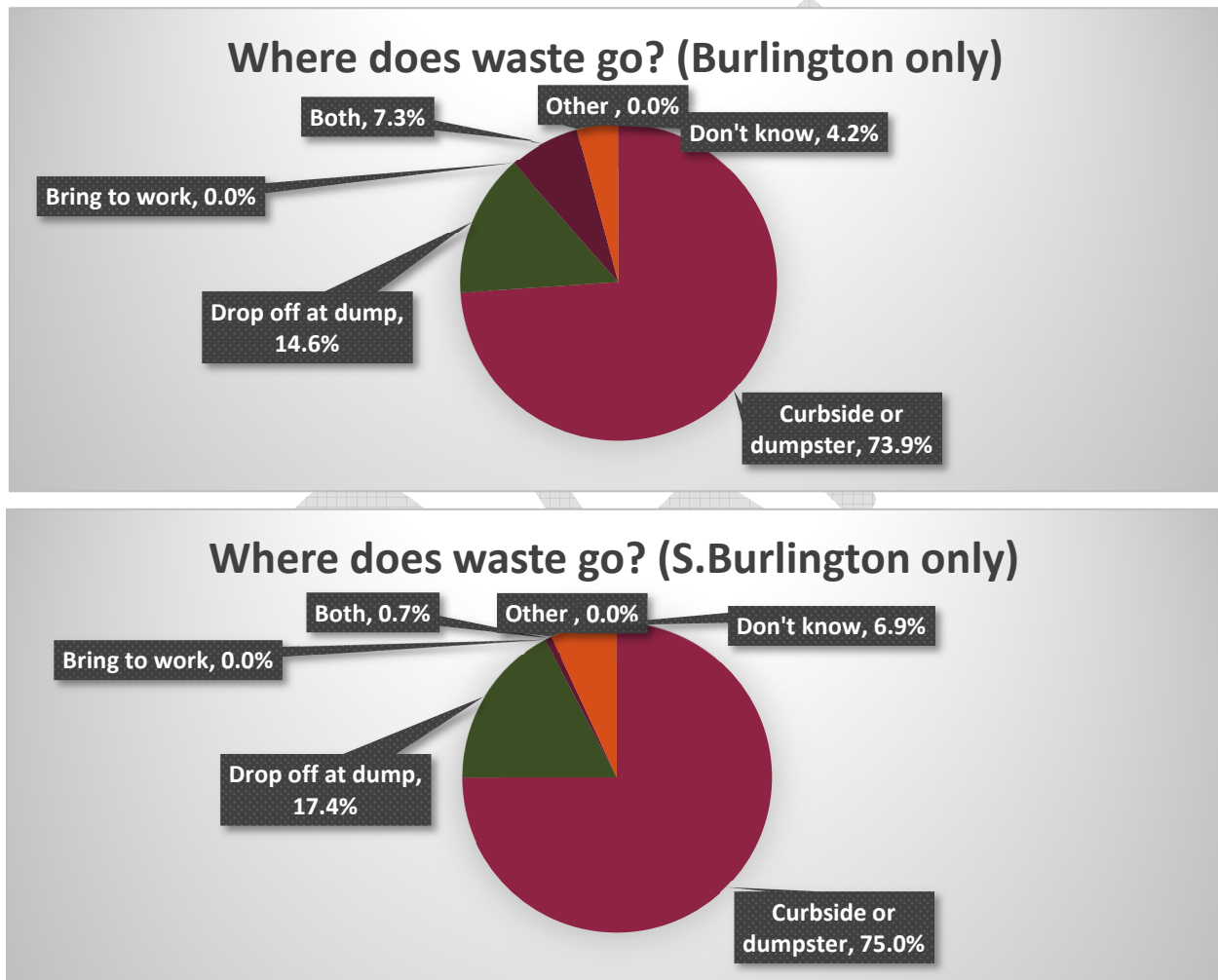


Figure 9: Participant response to, “Where does your Waste Go”?

Of the 73.9% of Burlington residents who told us they have a hauler, 64% said their hauler comes once a week to collect their trash, and 19% said the hauler comes once every-other-week to collect trash.⁷ Of the

⁵ The Chi-square statistic is significant at the .05 level.

⁶ The Chi-square statistic is significant at the .05 level.

⁷ The Chi-square statistic is significant at the .05 level.

75% of South Burlington residents who told us they have a hauler, 59% said their hauler comes once a week to collect their trash, and 19% said the hauler comes once every-other-week to collect trash.⁸ For recyclables collection in South Burlington, the most common frequency was every-other-week, at 45%, followed by once-weekly at 37%.⁹

Of the 19.4% in Burlington who said they take their trash and recyclables to a drop-off center, the plurality (48.7%) said they make the trip to the drop-off about once a week, followed closely by 30.8% who said they went about once every-other-week.¹⁰ Of the 17.4% in South Burlington who said they take their trash and recyclables to a drop-off center, the plurality (41.7%) said they make the trip to the drop-off about once a week, followed by 33.3% who said they went about once every-other-week.¹¹

Figure 10 displays participant understanding of collection of solid waste and recyclable material:

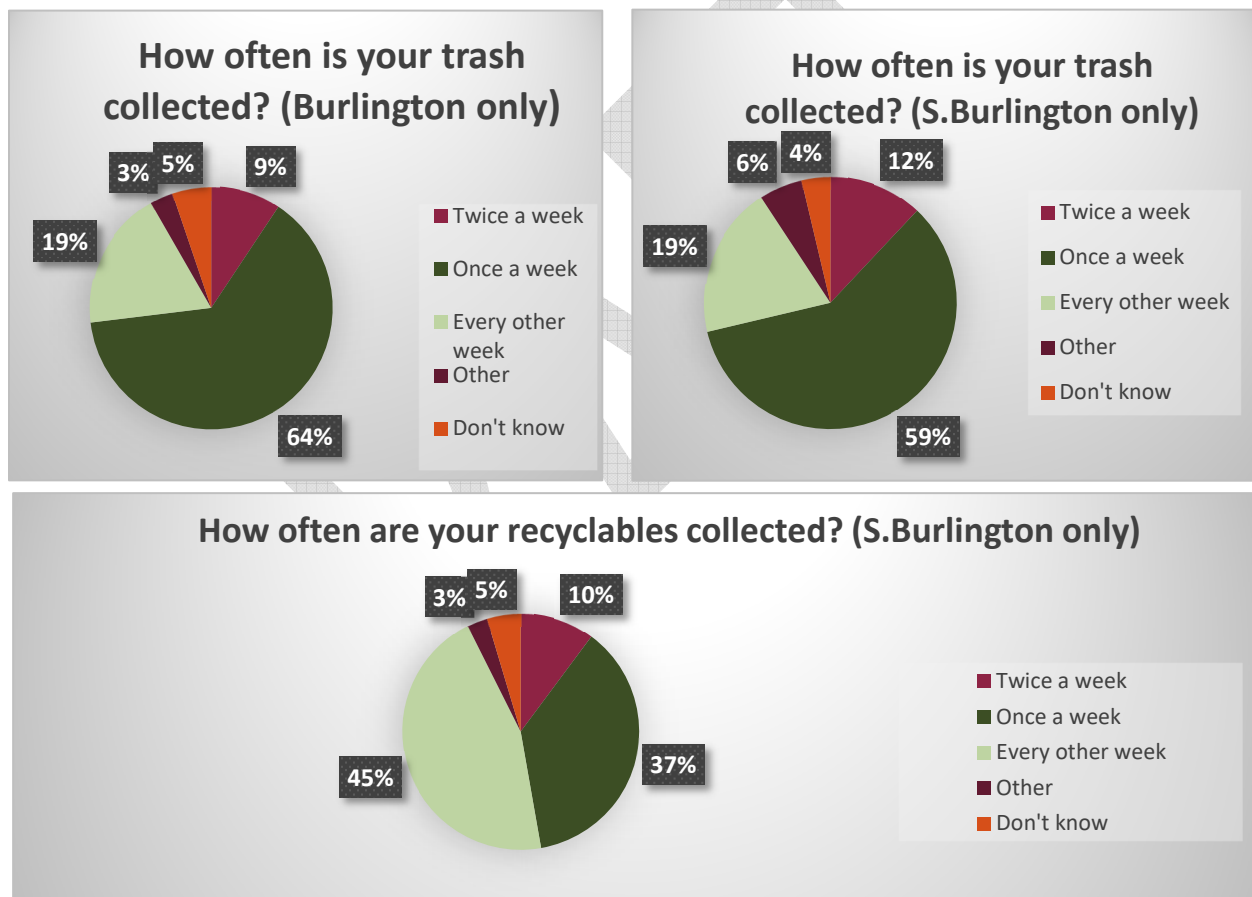


Figure 10: Participant understanding of collection of solid waste and recyclable material ¹²

⁸ The Chi-square statistic is significant at the .05 level.

⁹ The Chi-square statistic is significant at the .05 level.

¹⁰ The Chi-square statistic is significant at the .05 level.

¹¹ The Chi-square statistic is significant at the .05 level.

¹² All residents of Burlington receive City recycling service once weekly.

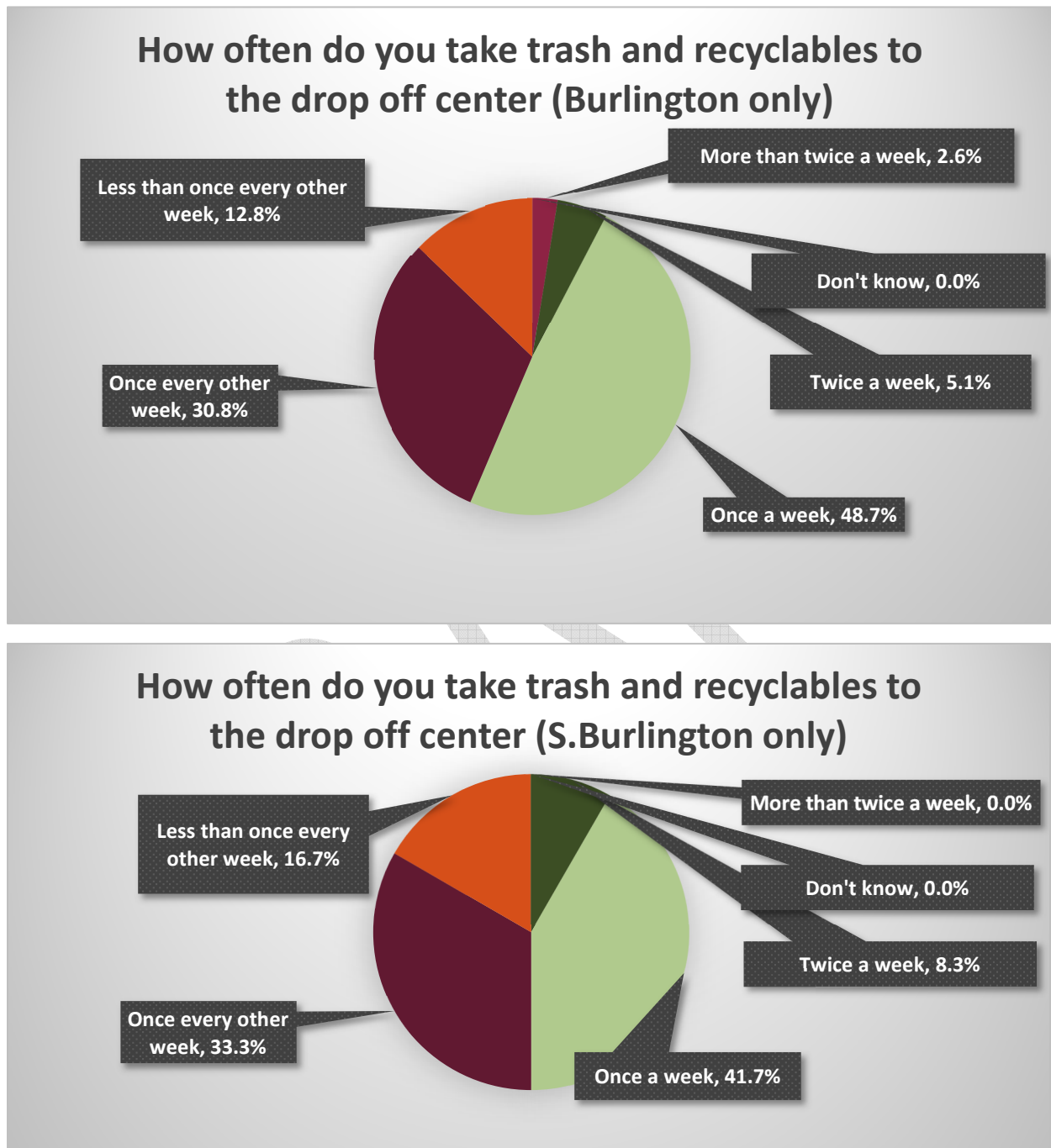
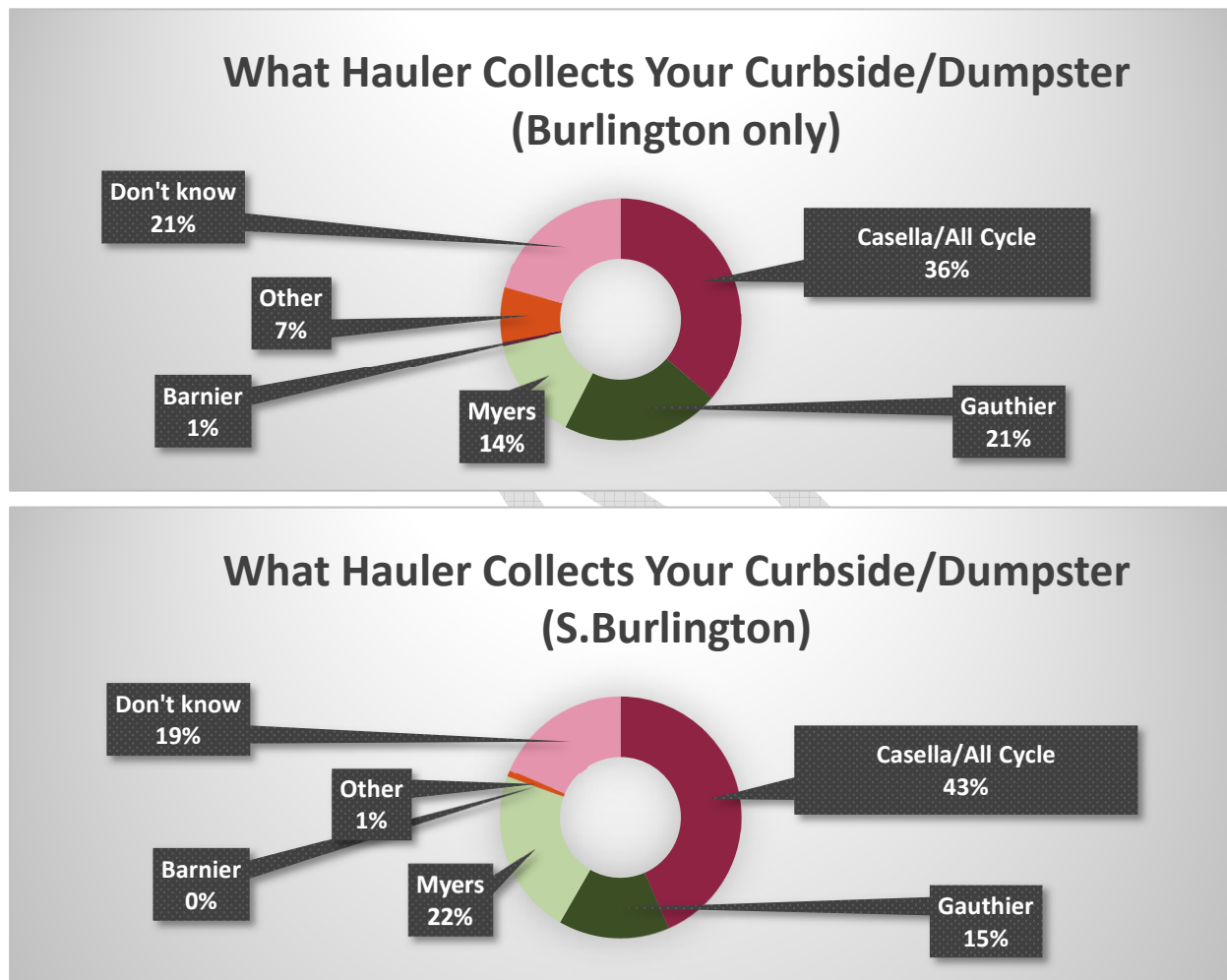


Figure 11: Response to, "How often do you bring your Waste to Drop Off"?

4.1.1.3 Which Hauler?

According to the respondents of the haulers in the Chittenden area, the hauler Casella/All Cycle has the most subscribers, with 36% in Burlington and 43% in South Burlington. The second place and third-place haulers ranked close to each other: Gauthier with 21% in Burlington and 15% in South Burlington, and Myers with 14% of respondents in Burlington and 22% in South Burlington. The next most frequent response was, “I don’t know”, at 21% in Burlington and 19% in South Burlington^{13,14}



As seen in Figure 13, residents who use a hauler were asked how much they pay per month for their services.¹⁵ Respondents were asked to give a dollar amount, and the responses were grouped into ranges.

Figure 12: Response to, “What Hauler Collects Your Curbside or Dumpster?”

¹³ The Chi-square statistic is significant at the .05 level.

¹⁴ Residents of mobile homes or apartments and condos were the most likely to respond that they did not know who their hauler is. The Chi-square statistic is significant at the .05 level; however, more than 20% of cells in the sub-tables have expected cell counts of less than five, and the minimum expected cell count is less than one; for these reasons, the Chi-square results might be invalid. The value of the responses is surer in the frequency and the context—i.e., residents of mobile homes or multi-family housing being unaware of the name of their trash hauler confirms industry experience.

¹⁵ The Chi-square statistic is significant at the .05 level.

Of those in Burlington who gave a dollar amount, there was no clear consensus. The most common value was “\$40 - \$44”, with 5.0% of the responses, and the least common amount given was “\$25 - \$29” with 1.2% of the responses. The most common response given, besides “I don’t know” or refusing to answer, was, “Nothing”, at 11.6%¹⁶ Of those in South Burlington who gave a dollar amount, there was a slightly clearer pattern, but no dollar amount represented even 10% of the responses. Of those who gave a dollar amount, the most common value was “\$40 - \$44”, with 8.2% of the responses. The next most common amount was “\$50 - \$74”, with 5.2% of responses. The least common amount given was “\$25 - \$29”, with 1.5% of responses. The most common response given, besides “I don’t know” or refusing to answer was, “Nothing”, at 13.4%. Although these results are not conclusive, they do confirm industry experience that pricing for collection service varies widely from one customer to another, even within the same town or neighborhood, due to a variety of market factors and business decisions.

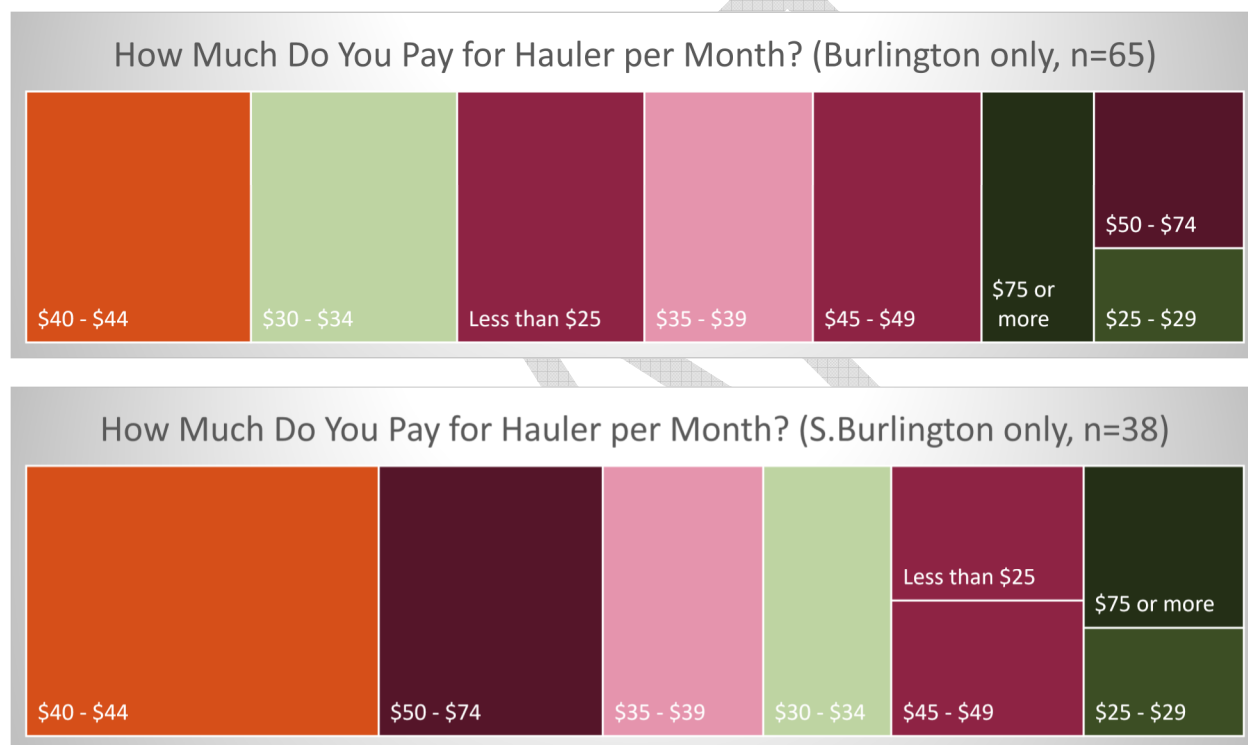


Figure 13: Response to, “How much do you pay for Trash Service per Month”?

4.1.1.4 Back-door Service

Residents were asked if their hauler offers a “back-door” service and if they use it. This is a service wherein the customer does not have to bring their carts or cans to the curb; instead, the collector comes up to the

¹⁶ In both cities, residents of townhouses, mobile homes, or apartments and condos were the most likely to respond that they pay “Nothing” for their hauler. The Chi-square statistic is significant at the .05 level; however, more than 20% of cells in the sub-tables have expected cell counts of less than five, and the minimum expected cell count is less than one; for these reasons, the Chi-square results might be invalid. The value of the responses is surer in the frequency and the context—i.e., residents of these housing types being unaware of the cost of their trash service confirms industry experience. These home types often have trash removal included in their HOA dues, condo board dues, or their monthly rent.

house or garage (usually) and brings the waste material to the truck. It is sometimes a premium service; other times, it is a courtesy accommodation for customers with mobility challenges. In Burlington, 46% of respondents said they do not use back-door service, and 40% said, “I don’t know”. Just 14% responded, “Yes”.¹⁷ In South Burlington, 61% of respondents said they do not use back-door service, and 34% said, “I don’t know”. Just 5% responded, “Yes”.¹⁸ There was no demographic group (city of residence, age, income level, education level, household size, etc.) notably or significantly more likely to use back-door service than another.¹⁹

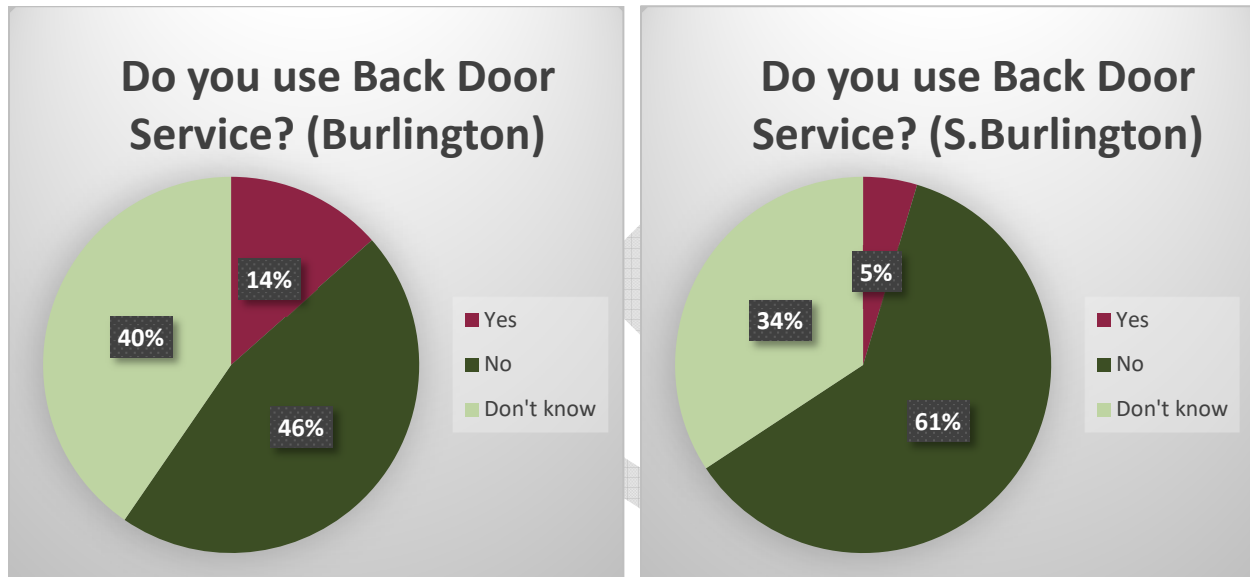


Figure 14: Response to, “Do you use “Back-door” Service”?

¹⁷ The Chi-square statistic is significant at the .05 level.

¹⁸ The Chi-square statistic is significant at the .05 level.

¹⁹ In Burlington there was a significant relationship between gender and use of back-door service; however, it is not conclusive. Each group was equally likely to say, “No.” Women were much more likely than men to say “Yes,” but men were much more likely to say, “I don’t know.”

4.1.1.5 Bulky Items

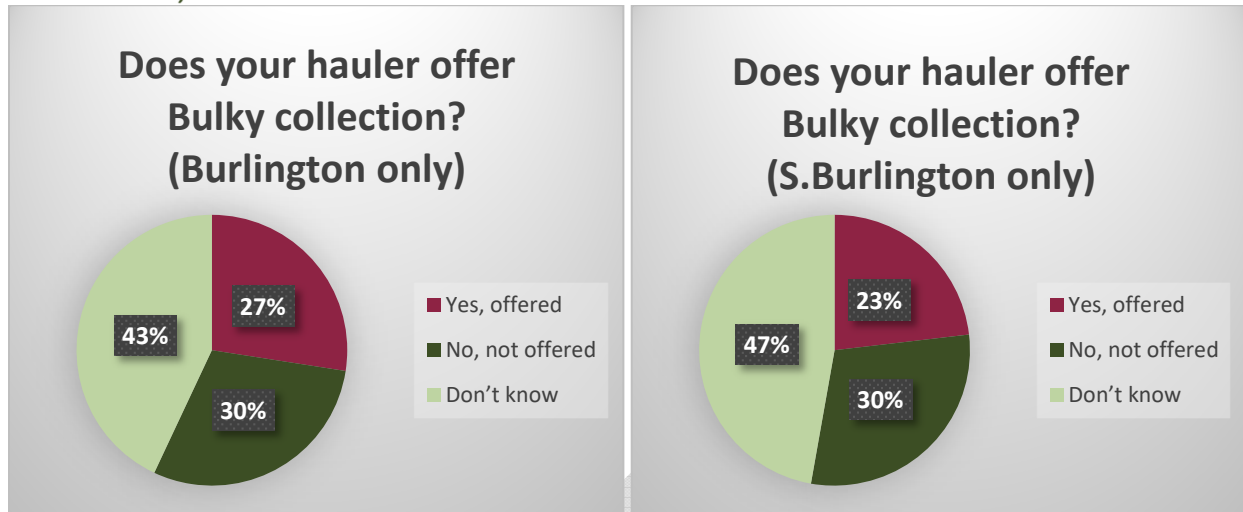


Figure 15: Response to, "Does your hauler offer bulky collection"?

Residents were asked several questions about bulky waste and what they do with it. Bulky items were described to the survey takers as, "larger items such as furniture or large appliances". The first questions were about curbside collection of these items. Most respondents did not know if their hauler collects these items; the remaining were split about evenly between, "yes, my hauler collects bulky items", and, "no, my hauler does not offer this service". This pattern was consistent across housing types.

The respondents who said their hauler does offer a curbside collection of bulky items were then asked if they use the service. In Burlington, 63% said, "No", and in South Burlington, 48% said, "No" or "I don't know". In Burlington, only 37% said, "Yes", but in South Burlington, 52% said, "Yes".

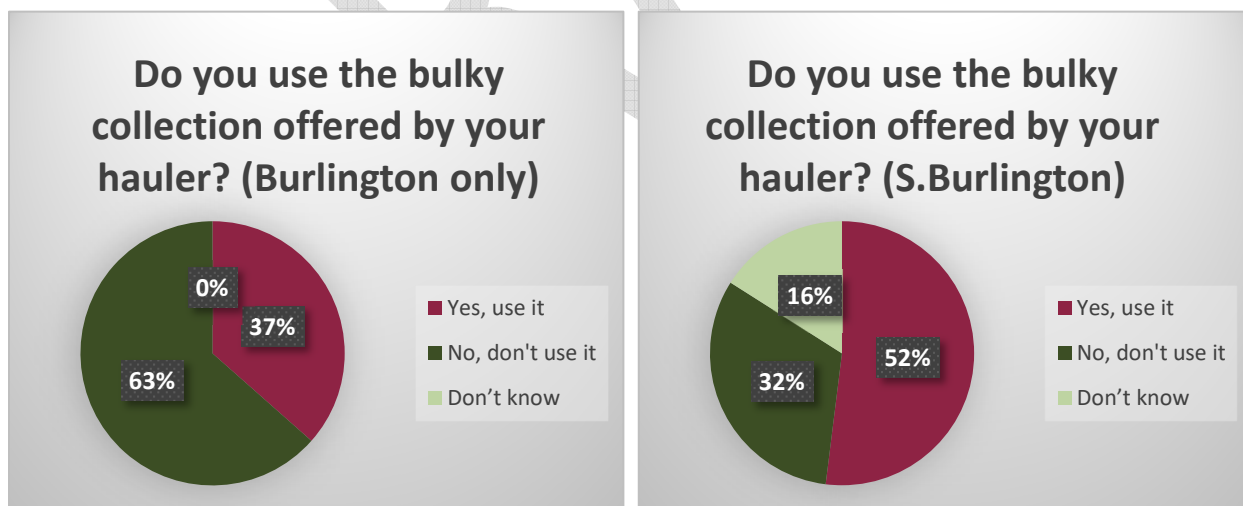


Figure 16: Response to, "Do you use the bulky collection offered by your hauler"?

Respondents who said they either do not have or do not use curbside collection of bulky items were asked what they do when they have something like that to dispose. The most common response was to take it to a drop-off center. The next most common response was to sell or give away the item, and a few

respondents said they would hire someone to remove it, like a “junk” hauler. There were no clear differences in responses among types of home; owner-occupants were much more likely to bring the item to a drop-off center than renters, they were equally likely to sell or donate an item, and renters were slightly more likely to use a junk hauler. In the survey, far more renters said, “Other” or “I don’t know”, than did owners.²⁰

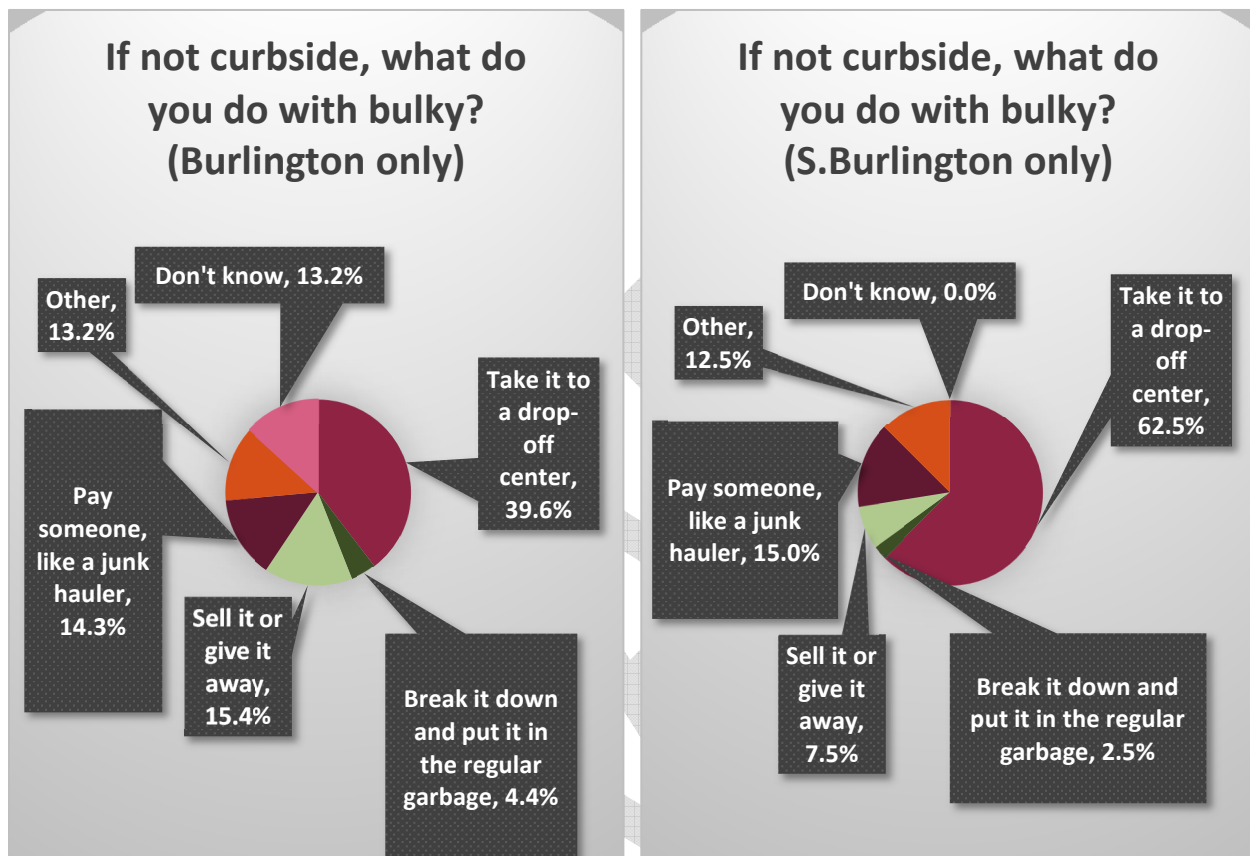
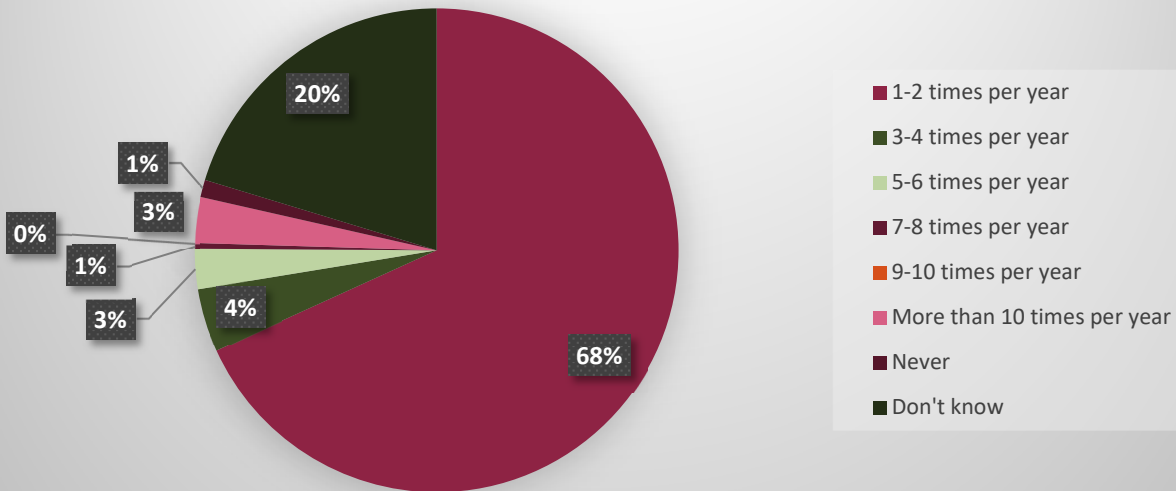


Figure 17: Response to, “If not curbside, what do you do with bulky”?

The reason relatively few residents use a curbside collection of bulky items may be that they do not dispose of these items very often. When asked how often they think they have bulky items to dispose, 68% of those in Burlington and 83% of those in South Burlington said only once or twice per year. Also, most of the people who said “other” when asked, “what do you do with bulky items?”, went on to specify that they do not have any such items. The frequency of the response, “1-2 times per year”, to this question was the same regardless of how the data were examined, and there was no demographic group (city of residence, type of housing, age, income level, education level, household size) that varied from that pattern.

²⁰ The Chi-square statistic is significant at the .05 level.

How often do you have bulky items to dispose? (Burlington only)



How often do you have bulky items to dispose? (S.Burlington only)

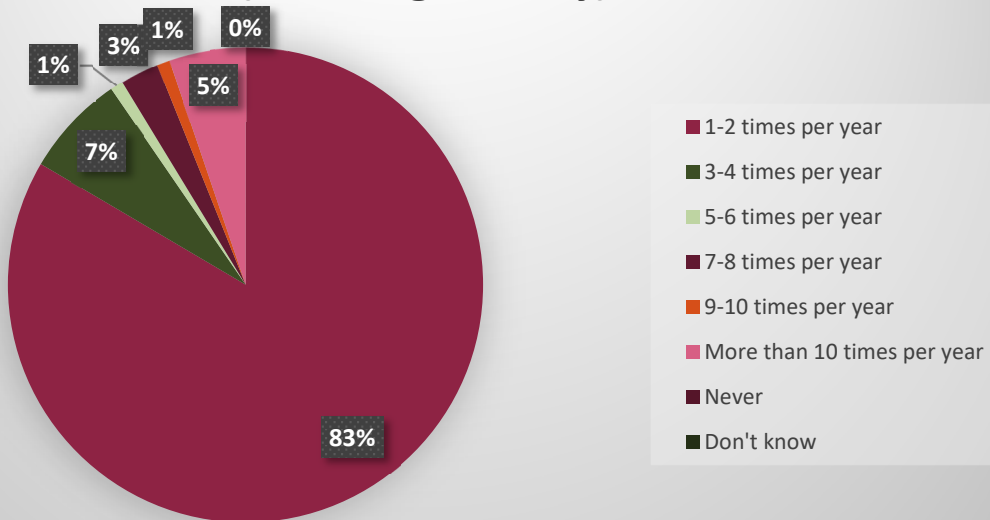


Figure 18: Response to, "How often do you have bulky items to dispose?"

4.1.1.6 Yard Trimmings

Residents were asked what they do with their yard trimmings, such as leaves and grass clippings. They could list all that apply to their activity. In Burlington, from the 261 respondents, 23.4% said they drop off the material at a designated composting location, 15% said their landscaper or maintenance company takes the material away, and 7.6% have separate yard waste collection, and 3.5% put it in their trash cans. This is a combined 49.5% in Burlington, who remove yard trimmings from their property. A combined 36.3% said they keep yard trimmings on their property, with 15.7% saying they compost at home, 19.8% saying they leave the trimmings on the lawn or ground, and 0.8% saying they burn it. Notably, 6.6% said they have no such material.

In South Burlington, from the 143 respondents, 21.1% said they drop off the material at a designated composting location, 22.7% said their landscaper or maintenance company takes the material away, and 2.5% have separate yard waste collection, and 0% put it in their trash cans. This is a combined 46.3% in Burlington who remove yard trimmings from their property. A combined 37.1% said they keep yard trimmings on their property, with 18.9% saying they compost at home, 17% saying they just leave the trimmings on the lawn or ground, and 1.2% saying they burn it. Notably, 11.9% said they have no such material.

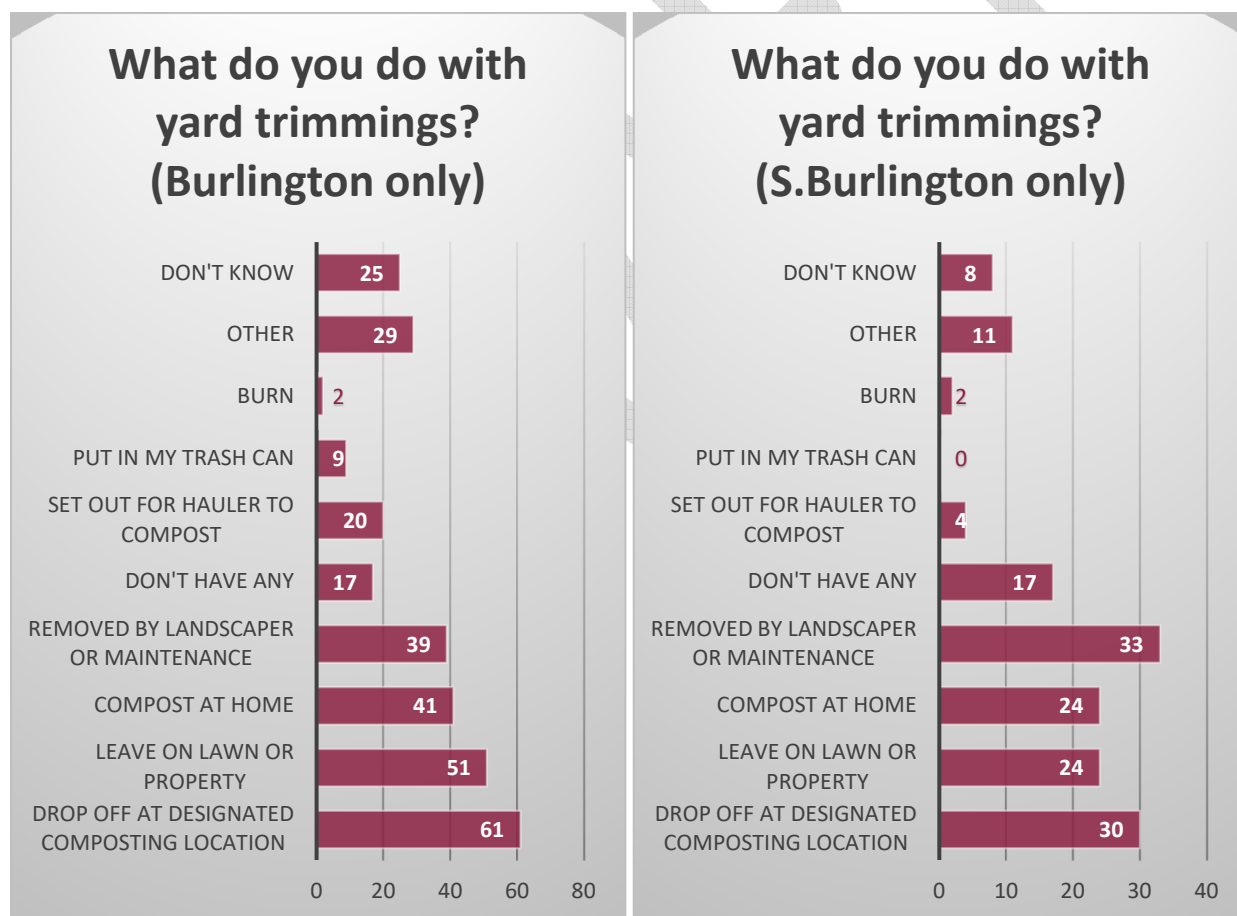


Figure 19: Response to, "What do you do with yard trimmings"?

As mentioned, some people may be both removing material from their property and keeping material on the property—for example, bagging leaves but mulching grass clippings and composting waste from the garden.

Residents of single-family homes were slightly more likely to compost at home or to use the drop-off center than residents of other types of housing. People who rely on the drop-off center for their trash and recycling, or use a combination of collection and drop-off, were notably more likely to compost at home than people with other levels of service.²¹

Figure 20 looks at who is composting at home in the combined survey population.²²

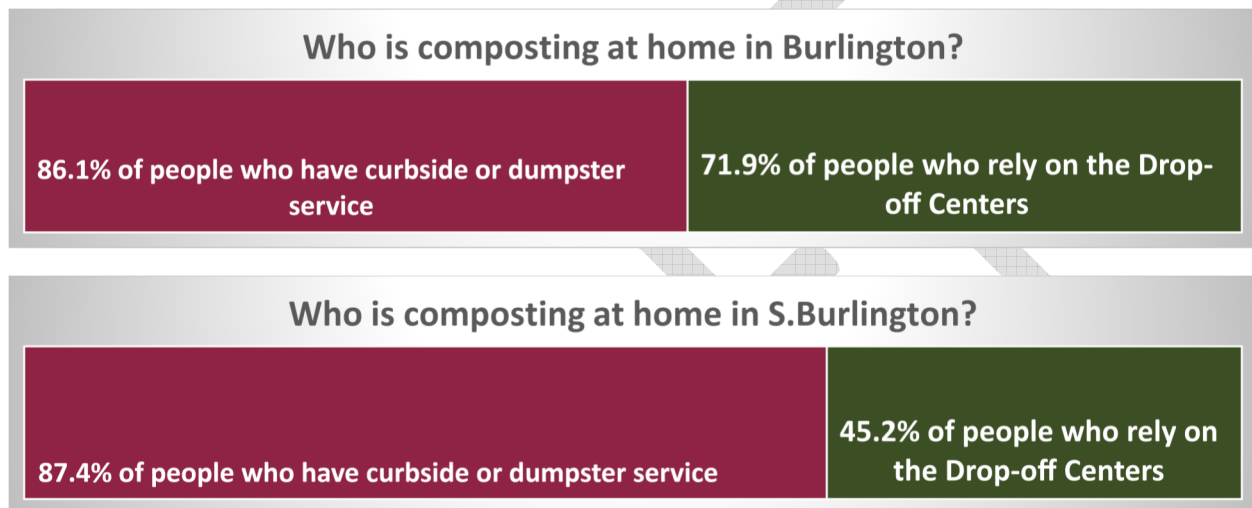


Figure 20: Frequency Results – Countywide response to, “Do you compost at home”?

Of the people who said they take yard trimmings to a drop-off center, a majority said they do that only once or twice a year. The most common amount given for delivery was six or more bags of material.

²¹ The Chi-square statistic is significant at the .05 level.

²² For Burlington, P=.069, 93.1% certainty; for South Burlington, the Chi-square statistic is significant at the .05 level.

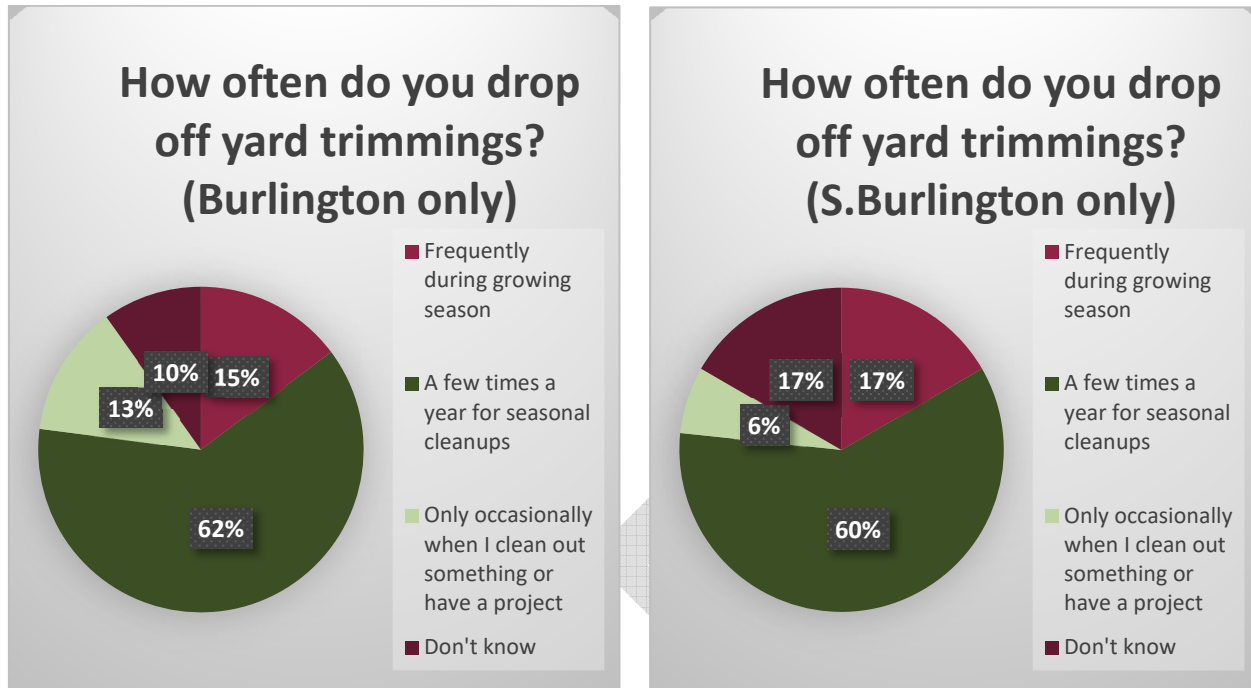


Figure 21: Response to, "How often do you drop off yard trimmings"?



Figure 22: Response to, "On average, how many bags of yard trimmings do you bring to drop-off"?

4.1.1.7 Franchising

The callers gave a short description of the consolidated waste and recycling program being considered for implementation in the Cities of Burlington and South Burlington. Included were both the pros and cons for the residents as well as for the haulers:

In most cases in Chittenden County, if you want curbside service, you can choose which hauler comes to your home to pick up your trash and recyclables. Many other communities (including some in Vermont) have chosen to assign routes to specific haulers through a bidding process so that only one hauler services a given neighborhood. This type of system can reduce fuel and other costs, air and noise pollution, the impact of trucks on the roads, and lower the overall cost to consumers; however, curbside customers would no longer have a choice of haulers, though all haulers in the system would be required to maintain specific service standards. In addition, some of the current haulers might not win contracts.

“Would you SUPPORT or OPPOSE this type of system”?

Once they were familiar with the overall project, 39% in Burlington and 50% in South Burlington said they would support this new system. In Burlington, 23% said they oppose it, and 16% in South Burlington said they would. More than a third, combined, in Burlington said they did not know (20%) or that this was not enough information for them to decide (18%). In South Burlington, also, just over a third said they did not know (28%) or that this was not enough information to decide (6%).

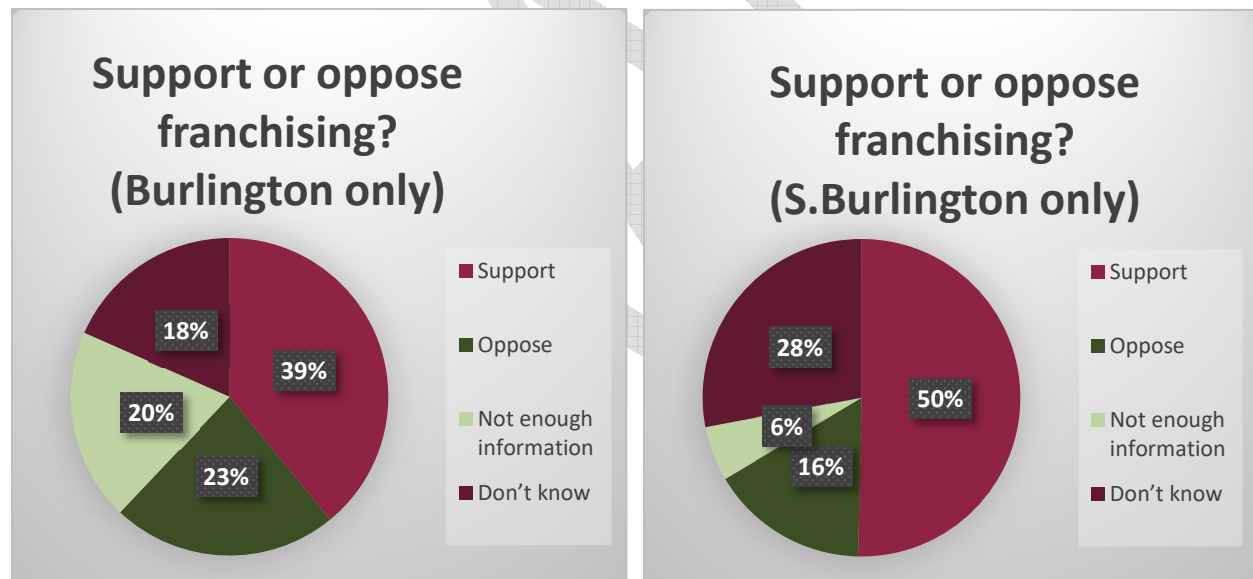


Figure 23: Response to, “Would you support or oppose franchising, as described to you today”?

Within the data of the responses to the question of supporting or opposing franchising, the following observations can be made:

- Looking at residents by home type in Burlington, townhouse dwellers support the idea of consolidation most strongly, with 84.7% in support and 15.3% opposing.²³ The idea also enjoys a

²³ The Chi-square statistic is significant at the .05 level; however, more than 20% of the cells in the sub-table have expected cell counts less than 5, so the results might be invalid.

great deal of support among residents of apartments and condos (who might be potential future homeowners) at 44.4%. Residents of single-family homes are split, with almost the same amount supporting the idea (35.6%) as opposing it (35.7%), and the remainder split evenly between saying they need more information or “I don’t know”. Among other home types (duplex, triplex, and mobile homes), there was no clear consensus.

- Looking at residents by home type in South Burlington, where overall support was stronger, Apartment dwellers support the idea of consolidation most strongly, with 58.7% in support and 1.1% opposing.²⁴ The idea also enjoys a great deal of support among residents of single-family homes, at 48.4%, and only 24.9% opposition. Townhouse residents had the least support, with just 25.5% supporting and 27.2% opposing. Among other home types (duplex, triplex, and mobile homes), there was no clear consensus.
- Between renters and owners of those who provided an answer, support in Burlington was slightly higher among owners (36.1% for renters and 44.2% for owners). Of the remaining response options, owners were more likely to express opposition (23.8% versus 19.3% among renters) and renters were more likely to say they needed more information or “I don’t know” (combined 44.6% versus 32.1% among owners). Among those who refused to say their home type or said “other”, there was no clear consensus.²⁵
- Between renters and owners in South Burlington, of those who provided an answer, support was slightly higher among renters (57.1% for renters and 49.8% for owners). Of the remaining response options, owners were more likely to express opposition (23.3% versus 1.6% among renters), and renters were more likely to say they needed more information or “I don’t know” (combined 41.2% versus 26.9% among owners). Among those who refused to say their home type or said “other”, there was no clear consensus.²⁶
- In Burlington, the longer a resident has been in Chittenden County, the more likely they were to oppose the idea or to say that they need more information, or say, “I don’t know”. Support among residents who have been in Chittenden for five years or fewer was strong, with only 1 person saying they would oppose the idea. Support among residents of longer than five years was close to the overall average with 37.6% supporting and 23.2% opposing.^{27,28}
- In Burlington, people with less income were generally supportive but less likely to lend their support, but that does not mean they were more likely to oppose; in actuality, 24.6% to 43.8% of those residents said they needed more information or, “I don’t know”. Support among the income brackets from \$25,000 to \$149,999 was largely comparable at 36.9% to 40.6%, although opposition was not as consistent. The bracket of \$75,000 to \$100,000 was an outlier, with strong support at 64% and low opposition at 21.8%. In the two highest income brackets, support was strongest, 85.0% to 94.7%, and opposition was the lowest at 15.0% to 0.0%.²⁹
- In South Burlington, nearly every income bracket expressed greater than 50% support. The exceptions were \$50,000 to \$74,999, which 44.1% support and the next answer being 28.0% at,

²⁴ P=.002, 99.8% certainty

²⁵ P=.126, 87.4% certainty

²⁶ P=.003, 99.7% certainty

²⁷ P=.028, 97.2% certainty

²⁸ In South Burlington, the results were not statistically significant when stratified by length of residence, because almost everyone who answered the question had lived in Chittenden County for more than 5 years. It is interesting to note that among those longer-term residents in South Burlington, 51.2% supported the idea, and next-most-common answer was, “I don’t know” at 27.1%.

²⁹ P=.061, 93.9% certainty

"I don't know"; and the income bracket of Less than \$25,000, where the only response with more than 8.5% was, "I don't know", at 77.2%. No bracket had greater opposition than 26%.³⁰

- In South Burlington, respondents to the survey who already have curbside or dumpster service or who rely on the drop-off supported the idea about equally (53.6% for curbside customers and 54.3% for those using drop-off). For both groups, opposition was low at less than 20%, and "I don't know" was more likely, at 22.3% for curbside customers and 28.4% for those who drop off.^{31,32,33}

Residents were then asked if there were a franchising system, how would they like to be billed for service. The responses from all respondents were varied, with 32.3% in Burlington and 41.3% in South Burlington saying, "directly from the hauler", but about as many (38.4% in Burlington and 30.4% in South Burlington) saying, "I don't know". People who said, "Other" were asked to specify, and these answers also varied, with the most common answer being through their association fees (35.2% in Burlington and 81.6% in South Burlington). Most of the remaining "Other" responses were that it should be rolled into property taxes, "free", or optional—i.e., they do not want the service and they do not want to pay.

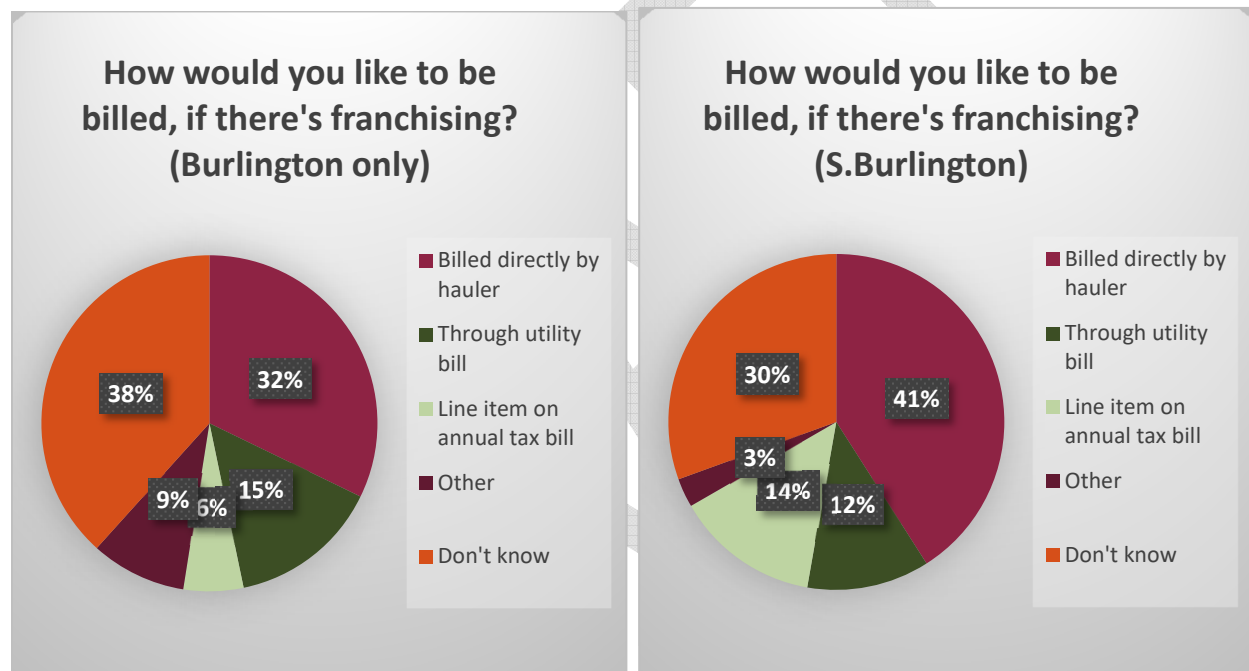


Figure 24: Response to, "How would you like to be billed, if there's franchising"?

³⁰ P=.002, 98.8% certainty

³¹ P=.007, 99.3% certainty

³² Only one person who uses both curbside and drop-off answered this question, making their response not statistically significant.

³³ In Burlington, the results were not statistically significant when stratified by type of service. Looking at frequencies, support was weaker than in South Burlington, and the frequencies of responses were inconclusive.

In Burlington,³⁴ people who already have a hauler preferred most strongly to continue to be billed by the hauler, even if there is a consolidated franchising system, the second-most common response from this group was, “I don’t know”. Among those relying on drop-off or using both curbside and drop-off, billing directly from the hauler was the most-supported option; however, “I don’t know” was the most common response from both groups. In South Burlington,³⁵ those using the drop-off centers were stronger supporters of being billed by a hauler. For those who already have a hauler, “I don’t know” was the most common answer.

For hauler bill versus a utility bill, residents of all housing types in Burlington preferred a hauler bill except townhouses, preferred a utility bill. “I don’t know”, was again a common response—in fact, the most common response except for among residents of single-family homes and triplexes.^{36,37,38}

In Burlington, there was not a strong pattern across the income brackets regarding how to be billed in a franchising system. The strongest supporters of direct billing from the hauler were in the \$25,000-\$34,999 bracket and the \$150,000-\$199,999 bracket. For the center brackets, the strongest response was, “I don’t know”. The strongest supporters for a line on the annual tax bill were in the wealthiest bracket. Support for a utility bill was more concentrated in the higher income brackets.³⁹ In South Burlington, support for a hauler bill was strong in most income brackets, and where it was not, the most popular answer was, “I don’t know”. Higher income brackets had more support for a line item on the tax bill than did lower income brackets. Support for a utility bill was low in South Burlington, across all the income brackets, with support there was concentrated in the wealthier brackets.⁴⁰

Earlier in the survey, 14.7% of respondents in Burlington and 17.1% of those in South Burlington had said they take their trash and recyclables to a drop-off center as their regular way of disposing of these materials. Those people were asked an extra question about the possible franchising. They were asked, “If this city-wide collection system was available, would you still want to go to the drop-off center to dispose of your trash and recyclables, or would you rather have curbside pickup”? The most frequent response was, “I would like to continue to take my trash to the drop-off center”, at 55.7% in Burlington and 53.5% in South Burlington, but the second most-frequent response was, “I don’t know” at 30% in Burlington and 41.7% in South Burlington. The least-common response was, “I would like to have curbside pickup”.

³⁴ The Chi-square statistic is significant at the .05 level.

³⁵ The Chi-square statistic is significant at the .05 level.

³⁶ The Chi-square statistic is significant at the .05 level.

³⁷ Only 2 people identified as residents of triplexes, and neither of them said “I don’t know.”

³⁸ In South Burlington, the results were not statistically significant when stratified by home type. Looking at frequencies, 41.3% supported a hauler bill, followed by 30.4% who said, “I don’t know.”

³⁹ The Chi-square statistic is significant at the .05 level.

⁴⁰ The Chi-square statistic is significant at the .05 level.



Figure 25: Response to, “If you currently do drop-off, would you still go to drop-off if there were a franchise, or would you rather have curbside ”?

The last few questions in the survey, before demographic information was collected, were specifically about having the collection of yard trimmings or bulky items included in a franchised curbside system. First, residents were asked if they would be interested in having curbside collection of bulky items in this service, and then they were asked how they would like to be billed—or how they would pay—for that service. Interest was divided; however, among those who were interested, most of them wanted to pay a fee if/when they used the service, not have it rolled into their rate.

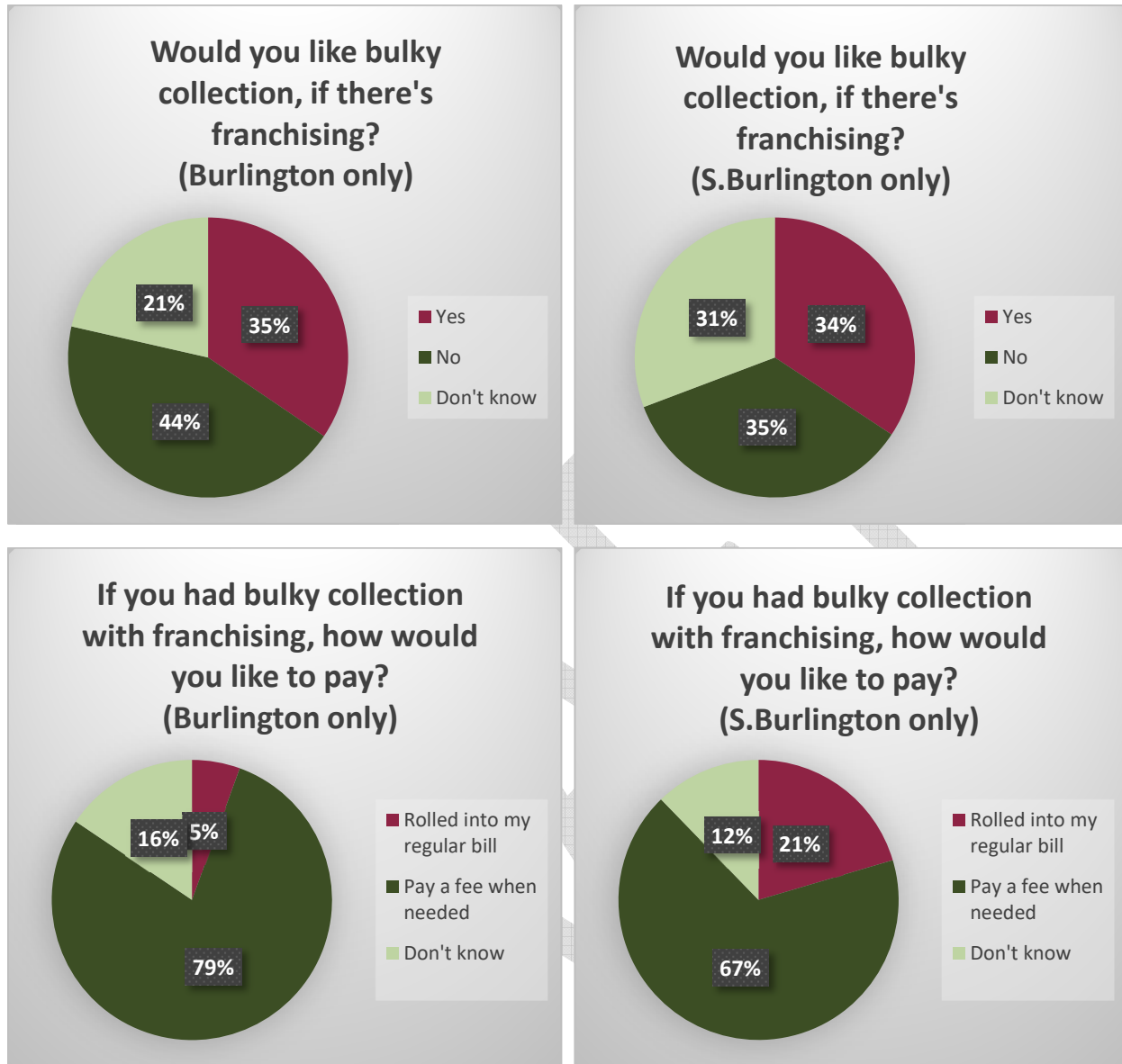


Figure 26: Response to, “Would you like bulky collection, if there's franchising”? and “If you had bulky collection with franchising, how would you like to pay”?

The residents were also asked about the possibility of having yard trimmings collection in a franchised system. Responses were divided, and in either city, only about a quarter said, “Yes”. A little more than half in Burlington saying, “No”, and a little over a third in South Burlington said, “No”, with more people saying, “I don’t know”, in South Burlington than in Burlington. This tracks with the responses about yard trimmings illustrated in Section 4.1.1.6, where the majority of respondents manage yard trimmings on their properties, through composting and leaving the trimmings on the lawn, or by a contractor such as a landscaper or maintenance company. A large percentage of residents also self-haul yard trimmings to a drop-off center.

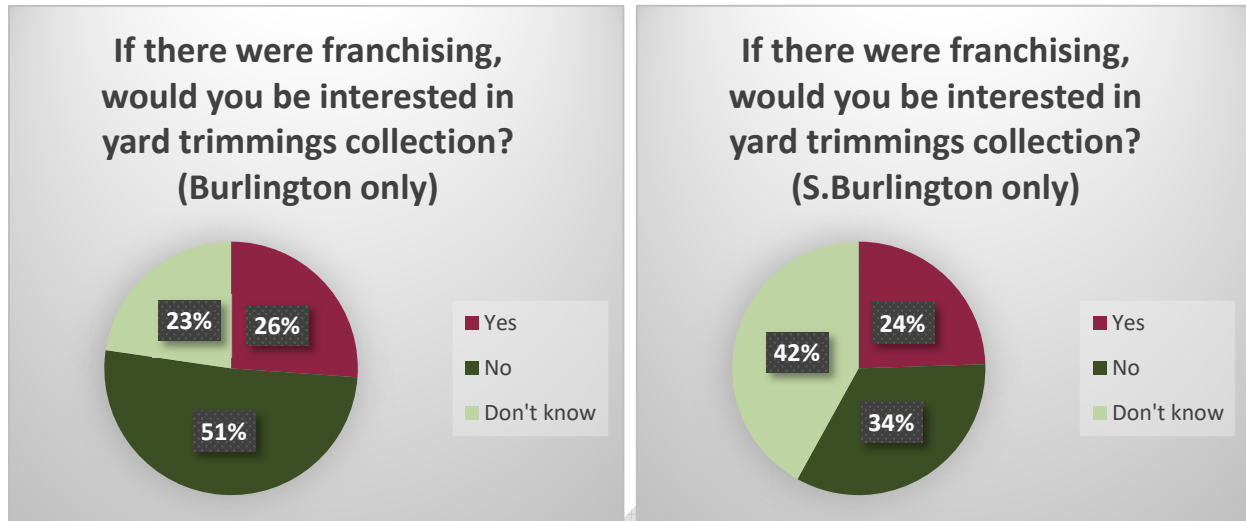


Figure 27: Response to, “If there were franchising, would you be interested in yard trimmings collection”?

In Burlington, the older a respondent was, the less they supported having yard waste collection in the franchising system. Oppositely, and the younger a respondent was, the more they supported it.⁴¹ Interestingly, in both Burlington⁴² and South Burlington,⁴³ there was more opposition than support for yard waste collection at single-family homes.

Finally, participants were asked if they would be interested in receiving collection of food scraps as part of the consolidated curbside service. Response was positive in both cities.



Figure 28: Response to, “If there were franchising, would you be interested in food scraps collection”?

⁴¹ The Chi-square statistic is significant at the .05 level.

⁴² P=.006, 99.4% certainty

⁴³ P=.016, 98.4% certainty

In Burlington, there was strong support among those ages 35 to 45, and from 65 to 74, with two-thirds saying, “Yes”. Those ages 45 to 54 had weaker support, but opposition was light—there were more, “I don’t know”, responses in this age bracket.⁴⁴ In South Burlington, support for food scraps collection was strongest among those ages 55 to 85, with younger brackets expressing uncertainty and the most popular answer was, “I don’t know”. In both cities, support was around 50% or more for both renters and owners. In South Burlington, support for adding food scrap collection was strong among those who have curbside or dumpster collection, at 60.2%. Of those relying on the drop off, 48.5% said they would not like to have the service.⁴⁵ Support was strongest among those with the least formal education and those with degrees, in South Burlington, with those in the middle expressing a lot of uncertainty.⁴⁶ People in single family homes, townhouses, and apartments in South Burlington all expressed 45% to 55% support.⁴⁷ In South Burlington, men supported food scraps collection strongly, at 68.4%. Women had more support than opposition, but the most popular response was, “I don’t know”.⁴⁸

Conclusions

- **Service subscriptions:** An estimated three-quarter of respondents reported having curbside subscription collection service at present. Among residents who currently rely on the drop-offs, 14.3% in Burlington and 4.8% in South Burlington indicated they would like to add curbside service in the franchise, for a combined 75% to 90% potential interest level⁴⁹. As indicated in the survey data, the GBB Team assumes that in a consolidated model, with more marketing and service packages, some of the residents who are now only using drop-off and not having a curbside collection subscription, would be converted to curbside customers. For the purposes of the collection modeling herein, the GBB Team has prepared model scenarios where all customers are using the service as well as scenarios where 85% of customers are using the service, hence a 15% “opt-out” rate.
- **Bulky waste:** Residents seem to have relatively few bulky items to dispose of, and most self-haul or otherwise manage it themselves. Many are not aware if they have curbside collection of bulky items, even if they have curbside trash collection. When asked about the potential to have the material collected at the curb as part of the consolidated service, there was a strong indication that people would rather pay for service as needed, rather than receive it “free” as part of their rate. This echoes the finding that people simply do not have bulky waste like appliances and furniture very often. Coupled with the interest in paying the hauler directly for services, this could be an add-on service that the franchisees sell directly to customers as needed, which is done in many cities across the U.S.
- **Food scraps:** Most respondents had a positive opinion of the idea to add food waste collection for composting to their waste management services. There was more uncertainty than opposition, except among those who rely on the CSWD drop-off centers for managing their waste. This program appealed to both renters and owners, and both apartment dwellers and those in single-family homes and townhomes. It should be made accessible to all residents.

⁴⁴ P=.007, 99.3% certainty

⁴⁵ The Chi-square statistic is significant at the .05 level.

⁴⁶ P=.001, 99.9% certainty

⁴⁷ P=.025, 97.5% certainty

⁴⁸ P=.003, 99.7% certainty

⁴⁹ The Chi-square statistic is significant at the .05 level.

- **Yard waste:** Most of the yard waste generated in Burlington and South Burlington is being managed on site or already being removed by the resident or their landscaper. Very few residents said they had yard trimmings collection right now. It is not clear if residents in Burlington included curbside leaf pick-up when they responded. While none specifically mentioned it in their responses, some did say it was collected for composting, and they may have been referring to the City program. Adding more comprehensive yard waste collection could be part of a larger organics collection program, but it is not a service that needs to be expanded beyond current services under the franchise.
- **Cost:** The cities have an opportunity to reduce collection costs through optimizing routes through route consolidation and evaluating high disposal costs. Consolidated collection can reduce the cost of solid waste collection by having one hauler service all the households within assigned section(s) of Burlington and South Burlington, as opposed to multiple haulers overlapping service within the same areas. At present, there are three primary haulers that service at least 71% of the homes in Burlington and 80% in South Burlington, with each hauler having a similar split of the market share in both cities (however, the actual proportion of their market share is likely higher due to the large number of people who responded, "I don't know"). Residents of Burlington and South Burlington have collection costs comparable to municipal areas that have an above-average cost of living.

Public Meetings

Refer to Appendix VII (forthcoming) for details on the public meetings conducted for this project.

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5. Collection Routing

Scenarios

The GBB Team evaluated the following scenarios for 1-4 units for both cities with roll carts in a consolidated model:

1. *Service frequency:*
 - a. All weekly
 - b. All every-other-week (EOW)
 - c. Weekly trash/EOW recycling
2. *Items collected:*
 - a. Trash, recycling, Food Waste
 - b. Trash, recycling
3. *Customers served:*
 - a. Opt-outs at 15% of customers
 - b. No Opt-outs

In any scenario with food waste collection, weekly collection is assumed. For any future RFP/contracting, the services such as food waste could be bid separately. Interest in food waste collection is high among residents, but for cost modeling herein, it was assumed either all customers were paying into the system or 15% were opting out. Additionally, the GBB Team modeled the 64-gallon size for solid waste as a benchmark in the consolidated routing scenarios since that service size worked in the EOW trash scenarios, with 32 gallons of trash service offered weekly⁵⁰.

For the current analysis, the route combinations evaluated are as follows:

- Base case: 1(c) + 2(b) + 3(b): Weekly solid waste/EOW recycling, No Opt-outs
- Option A: 1(c) + 2(b) + 3(a): Weekly solid waste/ EOW recycling, Opt-outs at 15% of customers
- Option B: 1(a) + 2(a) + 3(b): All weekly, solid waste, recycling, Food Waste, No Opt-outs
- Option C: 1(a) + 2(a) + 3(a): All weekly, solid waste, recycling, food waste, Opt-outs at 15% of customers
- Option D: 1(b) + 2(b) + 3(b): All EOW, solid waste, recycling, No Opt-outs
- Option E: 1(b) + 2(b) + 3(a): All EOW, solid waste, recycling, Opt-outs at 15% of customers⁵¹

C2 Logix evaluated collection routing using its Resource Estimator Tool. For this analysis, Burlington and South Burlington were routed as separate entities, and waste and recycling are routed as separate scenarios. It should be noted that the Resource Estimator Tool does not establish actual collection routes, the Tool only estimates the number of collection routes that will be needed to collect the solid waste and recyclables generated by the designated number of household units to be serviced for the scenarios indicated above. The results generated by the Resource Estimator Tool are then evaluated and utilized to establish the estimated number of collection routes which will be needed on a weekly basis as well as the

⁵⁰ In any future RFP for consolidated collection, pay-as-you-throw (PAYT) pricing should be included to match Vermont state curbside requirements.

⁵¹ Options F & G were added in the final review to indicate weekly collection without food waste, presented in Table 3 and 4.

estimated number of hours the collection routes will be operated. This information is then used to generate estimated operating costs and service price assumptions. It was also assumed that a mixed semi-automated and fully automated collection System would be needed to service the collection contracts.

The routing and operating assumptions which were used in the **base case** analysis are as follows:

For Solid waste (weekly):

- 21.00 seconds per pick up per household unit
- 33.65 lbs. per pick up per household unit
- 10-ton capacity truck

For Recycling (EOW):

- 15 seconds per pick up per household unit
- 23.50 lbs. per pick up per household unit
- 6-ton capacity truck

Routing assumptions:

- Truck went to the drop-off location at optimal point in the route
- All U turns were avoided
- Straight turns most preferred, and right turns were preferred to left turns
- All routing was done single side double pass, so the workers will not have to cross the street

Other time in the Route Summary Report:

- 30 min lunch
- 15 min pre trip
- 15 min post trip
- 20 min for each trip to the drop-off location

Collection routes were generally estimated to be within the below ranges for operating metrics.

- 650 to 800 household units serviced per route per day.
- 40 to 55 travel and route miles per route per day
- 8.0 to 9.50 operating per route per day

In any scenario with food waste collection, the following summary from the June 2014 report, which was prepared by Skumatz Economic Research Associates, Inc. for CSWD, was used to determine the estimated generation rate of 12.11 lbs. per week used in the Burlington and South Burlington route modeling.

Wayzata, MN	Hamilton, MA	Boulder, CO
<ul style="list-style-type: none"> • 1,300 households • Food waste collected separately weekly • 12.50 to 17.00 Lbs. per HH per week (Avg. = 14.75 Lbs.) 	<ul style="list-style-type: none"> • 2,600 HH's • Food waste collected separately weekly • 13.0 Lbs. per HH per week 	<ul style="list-style-type: none"> • 43,034 HH's • Food waste collected separately EOW • 8.6 Lbs. per HH per week

In addition for reference from the current hauler permit applications to CSWD, Table 1 presents the current service size offered and price range for both Burlington and South Burlington⁵².

Hauler Name	Weekly (Trash and Recycling)	Weekly (Trash and Bi-Weekly Recycling)	Biweekly (Bi-weekly Trash and Bi-weekly Recycling)	Monthly (Trash and Recycling)	Bi-weekly (Recycling and Monthly trash)	On-call (Trash and Recycling)
Hauler 1	\$28.00 to \$30.00		\$18.00 to \$24.00			
Hauler 2		32 Gallon: \$29.45-\$37.45	32 Gallon: \$26.45-\$34.45	32 Gallon: \$24.95-\$32.95		
		64 Gallon: \$36.95-\$44.95	64 Gallon: \$30.95-\$38.95	64 Gallon: \$27.95-\$35.95		
		96 Gallon: \$42.95-\$50.95	96 Gallon: \$33.95-\$41.95	96 Gallon: \$29.45-\$37.45		
Hauler 3	32 Gallon: \$29.87		32 Gallon: \$25.35	32 Gallon: \$17.25	32 Gallon: \$18.25	32 Gallon: \$17.25
	64 Gallon: \$ 44.21		64 Gallon: \$29.50	64 Gallon: \$20.25	64 Gallon: \$21.9	64 Gallon: \$20.25
	96 Gallon: \$62.66		96 Gallon: \$39.11	96 Gallon: \$25.25	96 Gallon: \$27.25	96 Gallon: \$25.25
	2-yard dumpster: \$95.35		2-yard dumpster: \$76.85	2-yard dumpster: N/A	2-yard dumpster: N/A	2-yard dumpster: N/A
Hauler 4	32 Gallon: N/A		32 Gallon: N/A			
	64 Gallon: \$36.00- \$49.00		64 Gallon: \$25.00- \$38.00			
	96 Gallon: N/A		96 Gallon: N/A			
	2-yard dumpster: \$79-\$139		2-yard dumpster: \$69-\$119			

Table 1: Private Hauler Service Levels and Pricing of Carts and Bins in CSWD permit application

⁵² The number of customers in each service type is not provided and GBB was not able to obtain this information after making a follow-up request to the haulers; however, the service price ranges are relevant as the consolidated system price ranges are modeled in the forthcoming section.

Table 2 displays the Capital Expenditure assumptions included in the consolidated collections scenario summaries for both the City of Burlington and the City of South Burlington that follow.

Table 2: City of Burlington and City of South Burlington- Consolidated Routing Scenarios - Capital Expenditure Assumptions

Interest Rate	8%
Financing Term	7 Years
Truck Depreciation Life	7 Years
Cart Depreciation Life	7 Years
Pickup Truck Depreciation Life	7 Years
Software Depreciation Life	7 Years
Truck Unit Cost	\$295,000.00
Cart Unit Cost	\$55.00
Pickup Truck Unit Cost	\$50,000.00
Routing Software Unit Cost	\$30,000.00

5.1.1 Potential Future RFP / Contract Process Specifications

5.1.1.1 Small Hauler Participation

The City of Burlington and the City of South Burlington receive solid waste and recycling collection services from multiple solid waste companies. The various companies are believed to have different levels of financial and management resources which may limit the ability of some companies to respond to a RFP process to provide solid waste and recycling collection services for all of the single-family units in each City. These limitations may consist of such items as reduced access to capital funds, limited support facility infrastructure, reduced administrative capabilities and the size of the companies' supervisory staff.

Restrictions or mechanisms that can be deployed in the bidding process to encourage small hauler participation, along with an assessment of each, include:

- a.) **Restrict how many districts/customers can be won:** In an effort to ensure small haulers have the ability to secure a collection contract, the City of Burlington may specify 2 to 3 areas of the City as separate collection districts each servicing approximately 4,335 to 6,500 residential units. The City of South Burlington may also specify 2 areas of the City as separate collection districts each servicing approximately 3,200 residential units. The Cities may then also specify within the RFP that the collection districts cannot be serviced by the same company. This RFP structure would allow for participation of multiple different haulers while ensuring that the opportunity to achieve the collection efficiencies associated with servicing all of the residential units within the designated collection districts. It should be understood, however, that this type of RFP structure must be consistent with the procurement requirements of each City. It should also be recognized that potential issues with this RFP structure may arise should the service pricing submitted by different companies as part of the RFP may result in the different pricing scenarios for each of the specified collection districts. This issue could be

- managed by developing a blended rate structure for all collection districts which would be applicable to all residential units with each City.
- b.) **Restrict bidding on certain districts to small haulers:** It is difficult at this time to determine how the concept of having bidding on certain collection districts restricted to small haulers (e.g., those serving less than a certain number of customers) through the establishment of goals and guidelines could be successfully incorporated into the RFP process since such an arrangement may result in higher pricing for the base case type of collection services within the designated collection districts. In addition, guidelines would have to be established for defining a “small hauler designation” which would need to be consistent with each City’s procurement requirements. This type of structure has been used by certain cities and counties within the United States in order to provide opportunities for disadvantaged minority and/or women owned businesses, however, the definition of such disadvantaged businesses is clearer and more established within municipal procurement procedures. A better approach to ensuring small hauler participation may include structuring the RFP process to allow for some of the specialty services such as bulk and back door collection services to be provided separately from the contracts issued for servicing all of the single-family residential units in each City. In addition, the Cities may wish to consider setting aside for small collection companies the solid waste and recycling collection services for the municipal office and facility locations throughout each city. These types of services may be better aligned with the capabilities and resources of the smaller companies.
 - c.) **Encourage bidders to use other haulers / bid cooperatively:** This concept maybe be considered problematic since it could be interpreted as encouraging collusion among several collection companies in an effort to manage the bidding process and the subsequently submitted pricing resulting in a potential illegal situation. However, the RFP process could be structured to allow sub-contracting of a limited percentage of the contracted services. The RFP process could also allow for the formal establishment of a joint venture form of a company between several small haulers in order to form an entity which would be able to service one of the collection districts as described above. The RFP process would most likely, however, need to restrict the companies which formed the joint venture from bidding on other collection districts separately.
 - d.) **Limit type of disposal permitted for trash collection (e.g., to landfill only, no incineration):** It is difficult at this time to understand how this would benefit the Cities or serve to provide for increased small hauler participation. It is recommended that the RFP process not limit the disposal options for the collected trash in any way in order to provide the opportunity for multiple bidders and expand the competitive environment for the RFP process.
 - e.) **Include knowledge of local area or familiarity with collection routes in Chittenden County as one of the selection criteria:** This selection criteria will need to specify familiarity and experience with the collection of solid waste and recyclables within the Cities of Burlington and South Burlington since they will be the designated collection areas and not the entire County. This requirement should not, however, be a significant factor in the selection process.
 - f.) **Allow for specialty services to be provided separately:** In an effort to provide an opportunity for smaller solid waste collection companies to participate in the contract(s) for solid waste and recycling collection services which may be finalized for the Cities of Burlington and South Burlington, it is recommended that the RFP process allow for some of the specialty services such as bulk, back door and food scraps collection services be provided separately from the contracts issued for servicing all of the single-family residential units in each City.

- g.) **Set aside collection to municipal offices/facilities for small haulers:** The Cities may wish to consider setting aside for small collection companies the solid waste and recycling collection services for the municipal office and facility locations throughout each city. These types of services may be better aligned with the capabilities and resources of the smaller companies.

Commerce Clause Review

It is difficult to determine the applicability of the Commerce Clause to the City of Burlington and the City of South Burlington RFP process since the Commerce Clause pertains to the regulation by the United States Congress of the flow of interstate commerce. The Commerce Clause has been applied to the transportation of solid waste across state lines and has generally prevented interference in such transportation by state and local ordinances with the exception of specific, defined situations. The need to ensure a fair and open bidding process as part of the RFP process is most likely required to be consistent with existing State of Vermont law and the procurement requirements of the City of Burlington and the City of South Burlington.

Definition of Commerce Clause

The Commerce Clause authorizes Congress to regulate commerce in order to ensure that the flow of interstate commerce is free from local restraints imposed by various states. When Congress deems an aspect of interstate commerce to be in need of supervision, it will enact legislation that must have some real and rational relation to the subject of regulation. Congress may constitutionally provide for the point at which subjects of interstate commerce become subjects of state law and, therefore, state regulation.

Acts Constituting Commerce

Whether any transaction constitutes interstate or intrastate commerce depends on the essential character of what is done and the surrounding circumstances. The courts take a commonsense approach in examining the established course of business in order to distinguish where interstate commerce ends and local commerce begins. If activities that are intrastate in character have such a substantial effect on interstate commerce that their control is essential to protect commerce from being burdened, Congress may not be denied the power to exercise that control. The power of Congress to regulate commerce also extends to contracts that substantially relate to interstate commerce. For example, Congress may regulate the rights and liabilities of employers and employees, as labor disputes adversely affect the free flow of commerce. Otherwise, contracts that do not involve any property or activities that move in interstate commerce are not ordinarily part of interstate commerce. Congress acts within its power when it regulates transportation across state lines. The essential nature of the transportation determines its character. Transportation that begins and ends within a single state is intrastate commerce and is generally not within the scope of the Commerce Clause.

Review with Legal and Procurement Departments

It is recommended that the City of Burlington and the City of South Burlington review possible small hauler participation mechanisms in detail with their Legal and Procurement Departments, prior to proceeding with RFP planning, to ensure that the most desired concept is consistent with all applicable legal requirements and established procurement policies.

5.1.1.2 Container Size Options

To comply with local and state law requirements for unit-based rates, any future RFP/contract process must be structured to specify that the selected contractor must provide different container size options for solid waste and recycling collection services such as 64-gallon and 32-gallon containers in order to provide residents with options which best meet the needs of the individual residents. The different container sizes will also allow residents to select the size which best matches the type of housing unit being serviced and the quantity of solid waste and recyclables which are generated by each residential unit.

The RFP can also request pricing for the different size container service options in effort to obtain favorable service rates for the Cities' residents for the smaller containers. It should be recognized, however, that by necessity there will be a limit to the different container sizes options due to the need to simplify the service structure to realize the potential service efficiencies and savings provided by the selected contractor.

In summary, the options for any future RFP/contracting for consolidated collection to maintain customer choice and preferences include:

- Option to elect curbside service⁵³
- Choice of adding organics collection
- Choice of back door service
- Choice of container size for solid waste and recycling

⁵³ If opt-outs are chosen instead of no opt-outs, opt-outs will need to be capped in the RFP terms. GBB suggestion is 15% of customers as opt-out maximum.

City of Burlington

5.1.2 Review of Current Collection System

The City currently provides once per week single-stream recyclables collection services to single-family and multi-family units. The recyclables collection is conducted utilizing three semi-automated trucks with a crew of one driver each. The three trucks service a combined total of approximately 1,500 homes per day and the recyclables are collected in 35-, 65- or 95-gallon rolling carts which can be purchased from the City. The pricing for purchasing the carts is provided below:

Bins available at \$5.00 each (not directly from City)	• 35-Gallon Cart - \$10.00 per cart.	• 65-Gallon Cart - \$20.00 per cart.	• 95-Gallon Cart - \$25.00 per cart.
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The collected recyclables are delivered to the CSWD MRF. The collection program results in the diversion of a total of approximately 5,940,000 pounds or 440 pounds per household of recyclable materials on an annual basis.

Solid waste collection services are provided on a subscription basis by four primary collection companies: Casella Waste, Barnier Waste, Myers Container Service Corp. and Gauthier Trucking, Inc. In any future consolidated collection system, existing recycling carts may be able to be utilized, at the discretion of the city and its program requirements.

5.1.3 City of Burlington, Consolidated Collections Scenarios—Summary Report

Table 3: City of Burlington -Consolidated Collections Scenarios- Summary Report

BURLINGTON						SOLID WASTE							RECYCLING							FOOD WASTE							TOTAL	TOTAL	
	Solid waste - 64 gal	Recycling - 64 gal	Food waste - 15 gal	Opt-Outs	Customers	Seconds per pick up per HH unit	lbs. per pick up per HH unit	Truck capacity (tons)	Routes Per Week	Resident cost per year (with disposal costs)	Tons per week	Tipping fee (\$/ton)	Seconds per pick up per HH unit	lbs. per pick up per HH unit	Truck capacity (tons)	Routes Per Week	Resident cost per year (with MRF tipping fees)	Tons per week	Processing fee (\$/ton)	Seconds per pick up per HH unit	lbs. per pick up per HH unit	Truck capacity (tons)	Routes Per Week	Resident cost per year (with composting tipping fees)	Tons per week	Processing fee	Resident cost per month	Annual Cost (\$) per Household	
Base case	Weekly	EOW	NA	None	13,005	21	33.65	10	16	\$208.27	218.83	\$137.75	15	23.85	6	8	\$69.63	77.55	\$65.00									\$23.16	\$277.90
Option A	Weekly	EOW	NA	15%	11,054	21	33.65	10	15	\$212.38	186.07	\$137.75	15	23.85	6	7	\$76.01	65.94	\$65.00									\$24.03	\$288.39
Option B	Weekly	Weekly	Weekly	None	13,005	21	33.65	10	16	\$208.27	218.83	\$137.75	15	23.85	6	16	\$101.58	77.52	\$65.00	15	12	10	14	\$94.61	78.04	\$60.00	\$33.71	\$404.46	
Option C	Weekly	Weekly	Weekly	15%	11,054	21	33.65	10	15	\$212.38	186.07	\$137.75	15	23.85	6	14	\$107.62	65.912	\$65.00	15	12	10	12	\$97.50	66.35	\$60.00	\$34.79	\$417.50	
Option D	EOW	EOW	NA	None	13,005	21	33.65	10	8	\$175.79	218.86	\$137.75	15	23.85	6	8	\$69.63	77.55	\$65.00									\$20.45	\$245.42
Option E	EOW	EOW	NA	15%	11,054	21	33.65	10	7	\$178.34	186.09	\$137.75	15	23.85	6	7	\$76.01	65.94	\$65.00									\$21.20	\$254.35
Option F	Weekly	Weekly	NA	None	13,005	21	33.65	10	16	\$208.27	218.83	\$137.75	15	23.85	6	16	\$101.58	77.52	\$65.00									\$25.82	\$309.85
Option G	Weekly	Weekly	NA	15%	11,054	21	33.65	10	15	\$212.38	186.07	\$137.75	15	23.85	6	14	\$107.62	65.912	\$65.00									\$26.67	\$320.00

Note: In some cases, there may be a difference between the number of routes specified above vs the number of routes indicated by the Routes Summary Reports due to a recommended combination of 1 to 2 routes per scenarios in order to achieve possible operating efficiencies.

Refer to City of Burlington, Consolidated Collections Routing Summaries for further details in Appendix V.

City of South Burlington

5.1.4 Review of Current Collection System

The City does not currently provide solid waste and recyclables collection services to its residents, and all such services are provided by private haulers such as Casella Waste, Barmier Waste, Gauthier Trucking Co. Inc. and Myers Container Service Corp. on a subscription basis. The City of South Burlington generally is comprised of more suburban single-family homes than the more densely populated urban communities observed within the City of Burlington.

5.1.5 City of South Burlington, Consolidated Collections Scenarios—Summary Report

Table 4: City of South Burlington -Consolidated Collections Scenarios- Summary Report

SOUTH BURLINGTON						SOLID WASTE							RECYCLING							FOOD WASTE							TOTAL	TOTAL
	Solid waste - 64 gal	Recycling - 64 gal	Food waste - 15 gal	Opt-outs	Customers	Seconds per pick up per HH unit	Lbs. per pick up per HH unit	Truck capacity (tons)	Routes Per Week	Resident cost per year (with disposal)	Tons per week	Tipping fee (\$/ton)	Seconds per pick up per HH unit	Lbs. per pick up per HH unit	Truck capacity (tons)	Routes Per Week	Resident cost per year (with MRF tipping fee)	Tons per week	Processing fee (\$/ton)	Seconds per pick up per HH unit	Lbs. per pick up per HH unit	Truck capacity (tons)	Routes Per Week	Resident cost per year	Tons per week	Processing fee	Resident cost per month	Annual Cost (\$) per Household
Base case	Weekly	EOW	NA	None	6433	21	33.65	10	8	\$210.48	108.235	\$137.75	15	23.85	6	4	\$71.66	38.36	\$65.00								\$23.51	\$282.14
Option A	Weekly	EOW	NA	15%	5468	21	33.65	10	8	\$215.23	91.81	\$137.75	15	23.85	6	4	\$78.38	32.54	\$65.00								\$24.47	\$293.61
Option B	Weekly	Weekly	Weekly	None	6433	21	33.65	10	8	\$210.48	108.235	\$137.75	15	11.92	6	8	\$109.66	38.41	\$65.00	15	12.00	10	7	\$96.48	38.60	\$60.00	\$34.72	\$416.62
Option C	Weekly	Weekly	Weekly	15%	5468	21	33.65	10	8	\$215.23	91.81	\$137.75	15	11.92	6	7	\$114.82	32.52	\$65.00	15	12.00	10	6	\$94.39	32.74	\$60.00	\$35.37	\$424.44
Option D	EOW	EOW	NA	None	6433	21	33.65	10	4	\$177.20	108.25	\$137.75	15	23.85	6	4	\$71.66	38.36	\$65.00								\$20.74	\$248.86
Option E	EOW	EOW	NA	15%	5468	21	33.65	10	4	\$195.13	91.82	\$137.75	15	23.85	6	4	\$78.38	32.54	\$65.00								\$22.79	\$273.51
Option F	Weekly	Weekly	NA	None	6433	21	33.65	10	8	\$210.48	108.235	\$137.75	15	11.92	6	8	\$109.66	38.41	\$65.00								\$26.68	\$320.14
Option G	Weekly	Weekly	NA	15%	5468	21	33.65	10	8	\$215.23	91.81	\$137.75	15	11.92	6	7	\$114.82	32.52	\$65.00								\$27.50	\$330.05

Note: In some cases, there may be a difference between the number of routes specified above vs the number of routes indicated by the Routes Summary Reports due to a recommended combination of 1 to 2 routes per scenarios in order to achieve possible operating efficiencies.

Refer to City of South Burlington, Consolidated Collections Routing Summaries for further details in Appendix VI.

Consolidated Routing Observations

In the modeling presented above for both cities, note that current CSWD Materials Recovery Facility and Casella Transfer Station gate rates were used for collection routing pricing estimates. It is assumed that negotiated rates would be more favorable to the ratepayer; in this way, the rate estimates for service packages on the summary table are conservative. As indicated, the most-cost effective scenarios are based on 100% participation by all the single-family units in each of the Cities. This is an indication of the current collection system's inefficiency, further discussed in the recommendations section.

Regarding the comparison of estimated annual system costs for current and potential future service in both cities, there are significant potential savings.

Current Cost of Solid Waste Collection in the City of Burlington and South Burlington:

Using bi-weekly/EOW solid waste and recycling as the comparative service level⁵⁴:

- From Table 1 above, residents of both Burlington and South Burlington pay between \$25.00 and \$38.95 per month for bi-weekly solid waste and recycling services from private haulers.
 - Assuming that all eligible households use this service level, the City of Burlington's annual system cost would range between \$3.9M and \$6M per year for collection services.
 - Assuming that all eligible households use this service level, the City of South Burlington annual system cost would range between \$1.9M and \$3M per year for collection services.

Future Cost of Solid Waste Collection in the City of Burlington and South Burlington in a Consolidated model:

Using bi-weekly/EOW solid waste and recycling as the comparative service level:

- From Table 3 and Table 4 above, the GBB team estimates:
 - Residents of Burlington would pay \$20.45 per month for bi-weekly solid waste and recycling services. Assuming that all eligible households use this service level, the City of Burlington system cost would be \$3.2M per year for collection services.
 - Residents of South Burlington would pay \$20.74 per month for bi-weekly solid waste and recycling services. Assuming that all eligible households use this service level, the City of Burlington system cost would be \$1.6M per year for collection services.

Potential Savings to the Solid Waste Collection Systems of the City of Burlington and the City of South Burlington if Consolidated Collection is implemented:

Using bi-weekly/EOW solid waste and recycling as the comparative service level, assuming all residents were participating in the system:

- City of Burlington: The annual system cost savings could be between \$700K to \$2.8M.⁵⁵
- City of South Burlington: The annual system cost savings could be between \$300K to and \$1.4M.⁵⁶

⁵⁴ Using weekly solid waste and recycling as the comparative service level, the savings estimates presented in the section that follows would increase by at least 20%.

⁵⁵ Burlington annual system costs would decrease an estimated additional \$380K for implementing a consolidated collection with 15% opt out maximum.

⁵⁶ Savings would decrease by an estimated \$158K by implementing a consolidated collection system with a 15% opt out maximum.

Greenhouse Gas Impact

5.1.6 Greenhouse Gas Impact Summary

Below is a summary table of CO₂E (Carbon Dioxide Equivalent) emissions for the Consolidated Collection Scenarios for Burlington and South Burlington. Notes, assumptions, and overarching methodology of CO₂E emissions calculations are included in this section. *Refer to Appendix II for detailed calculations.*

Table 5: CO₂E Emissions for Consolidated Collection Model (Pounds of CO₂E per week and per year)

City	Consolidated Collection Scenarios	# of Trucks in Fleet	Pounds of CO ₂ E per Fleet per week	Pounds of CO ₂ E per Fleet per year
City of Burlington	Solid Waste Collection (Weekly)	3	3,501	182,043
	Recycling Collection (EOW)	2 ⁵⁷	3,990	103,745
City of South Burlington	Solid Waste Collection (Weekly)	2	2,039	106,021
	Recycling Collection (EOW)	2	2,155	56,023

Abbreviations:

- “CO₂E”: Carbon Dioxide Equivalent
- “pgd”: per gallon diesel
- “mpg”: mile per gallon

Common Conversions and Assumptions

- 1 metric ton= 2,205 pounds
- Assumed Averaged Fuel Economy of a Refuse Truck = 3.5 miles pgd ⁵⁸(Source: Sam Lybrand)
- Assumed Fuel Type of Refuse Trucks = Diesel

Model Notes:

- The GBB Team used US EPA’s Calculation Equivalent for metric tons of CO₂ per gallon of diesel fuel: 10.180 × 10⁻³ metric tons CO₂ pgd; if converted into grams = 10,180 grams CO₂ pgd⁵⁹
- The GBB Team used EPA Equivalent for metric tons of CO₂E to calculate ratio of CO₂ emissions to total vehicle greenhouse gas emissions = 1 CO₂, CH₄, and N₂O/0.988 CO₂ ⁶⁰

⁵⁷ The current City of Burlington collection uses three trucks. Based on the route scenarios modeled for the City of Burlington, in Table 3, we are estimating that it would take two trucks to cover the population.

⁵⁸ Source: Trucks per fleet for all scenarios were provided by Sam Lybrand, September 3, 2019

⁵⁹Source: www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, See section, “Gallons of diesel consumed”

⁶⁰Source: 3) Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel. February 2005. Reference retrieved from: www.chargepoint.com/files/420f05001.pdf

- *Further Explanation: Ratio based on Intergovernmental Panel on Climate Change (IPCC) guidelines that requires an oxidation equivalent when calculating fuel emissions. According to EPA, an oxidation factor of ~.99 is used for oil-based fuels and products to account for the portion of fuel that is not oxidized. ("99% of the carbon in the fuel is eventually oxidized, while 1% remains un-oxidized").⁶¹*
- The GBB Team used US EPA GHG Calculation for CO₂E emitted from passenger vehicle but adjusted it for a refuse truck. To adjust for a refuse truck, we substituted the metric tons of CO₂ for a gallon of diesel (10.180×10^{-3}) and the average fuel economy for a refuse truck (3.5 miles mpg):⁶²
 - *Base Equation: 8.89×10^{-3} metric tons CO₂/gallon gasoline $\times 1/22.0$ miles per gallon car/truck average $\times 1$ CO₂, CH₄, and N₂O/0.988 CO₂ = 4.09×10^{-4} metric tons CO₂E/mile*
 - *In other words: Metric tons CO₂/gallon fuel \times average fuel economy per gallon vehicle $\times 1$ CO₂, CH₄, and N₂O/0.988 CO₂ = Total metric tons CO₂E/mile*
 - *For a refuse truck: 10.180×10^{-3} Metric tons CO₂/gallon fuel $\times 3.5$ miles pgd $\times 1$ CO₂, CH₄, and N₂O/0.988 CO₂ = Total metric tons CO₂E/mile*

5.1.7 Observations/Conclusions regarding Greenhouse Gas Impact

From the Project Survey respondents, three (3) haulers served 75% of the residential units of the cities; however, none served greater than 50%. From this finding, the GBB Team assumed that the three primary haulers are covering nearly all route miles within the cities in order to service their market share at present

The GBB Team did not have existing routes from the haulers to compare to the results of the routing scenarios; however typically communities can see on average 15-25% improvement in efficiency after balancing routes (assuming one service provider who has never routed before).

Beyond the impact from route optimization, in the case of Burlington and South Burlington, it can be estimated that a consolidated collection system could result in a higher two-thirds reduction in current route miles traveled for solid waste collection since only one hauler per district will be covering nearly all route miles compared to the three service providers currently covering both cities. Based on the proposed reduction in miles traveled, the Cities' could see savings up to two-thirds in greenhouse gas emissions.

Recommendations for Consolidated Residential Collection System

Based on the analysis herein, the GBB Team recommends the following for a consolidated residential collection system in the Cities of Burlington and South Burlington.

Recommendation 1: The Cities should consider negotiating disposal agreements for the solid waste collected from the City of Burlington and the City of South Burlington with Casella Waste for the solid waste delivered to the Casella Waste Transfer Station by each City.

***Rationale:** The negotiation and finalization of the disposal agreements will ensure that Casella Waste does not have a competitive advantage over the other waste haulers who may be submitting proposals in response to the RFP process. Casella Waste operates the only solid waste transfer*

⁶¹ Average Carbon Dioxide Emissions Resulting from Gasoline and Diesel Fuel. February 2005. Reference retrieved from: www.chargepoint.com/files/420f05001.pdf

⁶² Miles driven by the average passenger vehicle www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references, See section, "Miles driven by the average passenger vehicle"

station located in the District and the finalized disposal agreements would ensure a level playing field for all waste companies which might submit proposals.

Recommendation 2: The City of Burlington and the City of South Burlington should consider being billed directly by CSWD for the processing of the single-stream recyclables collected from each City and have the selected contractor(s) only charge for collection services.

***Rationale:** The direct billing of the Cities by CSWD will eliminate the market risk which the haulers who participate in the RFP process would be required to absorb over the course of a 7 to 10-year contract and encourage increased participation in the RFP process. This arrangement would also ensure that costs associated with the MRF tipping fees will be charged directly to the Cities. In addition, CSWD and the Cities of Burlington and South Burlington would be able to establish a mechanism to revise the tipping fees on a quarterly or annual basis in order to adjust for changes in market conditions associated with the resale value of the recycled materials.*

Recommendation 3: The City of Burlington and the City of South Burlington should consider requesting pricing via a RFP for all customers at requested service levels, as well as a contractual opt-out maximum of 15% of households. It is recommended that the RFP process request rates for the below service options from potential contractors:

- Weekly solid waste and recyclables collection.
- Weekly solid waste and every-other-week recyclables collection.
- Every-other-week solid waste recyclables collection.
- Weekly food scrap waste collection.
- Back-door service for each of the above solid waste and recyclables collection options.

It is also recommended that residents be provided with the option to opt-out from the weekly food scrap waste collection service; however, the cities will most likely need to make a similar minimum participation rate guarantee to the selected contractor in order to ensure the needed service efficiencies and obtain cost-effective pricing for the service.

***Rationale:** As modeled in the scenarios, a contractual opt-out maximum of 15% of households can encourage increased participation in the RFP process by ensuring revenue and cost stability for the service providers submitting proposals in response to the RFP. Requesting pricing for an all customers service option and a 15% opt-out maximum service option will ensure the Cities can make the most informed decision for service delivery to the citizens. It is recommended that residents be provided with the option to opt out from all of the above solid waste and recyclables collection service options, however, in order to provide potential contractors a basis for preparing their proposals the cities will need to agree to commit to paying the contractors a minimum participation rate of 85% in the event the opt-out component exceeds 15% in order to secure favorable service rate structures as part of the final executed contract.*

Recommendation 4: It is recommended that the RFP packages be prepared based on the two cities billing residents directly through their current utility billing system.

***Rationale:** With this arrangement, any proposals submitted by solid waste companies responding to the RFP process should be more cost effective because they will not have to accept any accounts receivable risk associated with the collection contracts. The City of Burlington will also be able to*

use this process to eliminate its current system of charging all residents a solid waste fee of \$4.20 per month, which is collected by the haulers from residents and subsequently reimbursed to the City.

Recommendation 5: It is recommended that the term of the collection contracts be seven (7) years with one (1) three-year option exercised at the discretion of the Cities.

***Rationale:** The initial 7-year term of the contract will ensure that the companies which submit proposals will be able to obtain an adequate return on investment for the collection vehicles and equipment they must acquire to perform the collection contracts. The one (1) three-year contract option is also likely the most administratively efficient process for the Cities to amend and extend from the base term of the collection contracts.*

Recommendation 6: It is recommended that CSWD take into consideration the possible expansion of the capacity of its food waste/composting facility should the collection of residential food waste be included as part of the RFP process.

***Rationale:** The availability of sufficient food waste recycling/disposal capacity within the District will be necessary to ensure the adequate performance of the food waste collection component of the collection contracts.*

Recommendation 7: It is recommended that the Cities of Burlington and South Burlington issue separate RFP's for collection services.

***Rationale:** This will provide each City with sufficient flexibility to decide if they wish to proceed with finalizing the collection contracts following the completion of the RFP process.*

Recommendation 8: In an effort to provide an opportunity for smaller solid waste collection companies to participate in the contract(s) for solid waste and recycling collection services which may be finalized for the Cities of Burlington and South Burlington, it is recommended that the RFP process allow for some of the specialty services such as bulk, back door and food scraps collection services be provided separately from the contracts issued for servicing all of the single-family residential units in each City. In addition, the Cities may wish to consider setting aside for small collection companies the solid waste and recycling collection services for the municipal office and facility locations throughout each city. These types of services may be better aligned with the capabilities and resources of the smaller companies.


It is recommended that the City of Burlington and the City of South Burlington review this concept, prior to proceeding, in detail with their Legal and Procurement Departments to ensure that the concept is consistent with all applicable legal requirements and established procurement policies.

***Rationale:** This will provide each City with sufficient flexibility to meet the needs of its residents based on a contracted price. It would be most administratively efficient for the Cities to directly bill the residents for the backdoor collection services and the residents to arrange for the on-call bulk waste collection services directly with the collection contractors and be billed directly by the contractors.*

6. Comparative Analysis of Current Utility Bills

City of Burlington

Currently, residents of Burlington receive one monthly utility bill for Stormwater, Sewage, and Water Services. As seen in Figure 29, the combined monthly utility bill includes usage information and summary of charges for these three utilities and a franchise fee.



BURLINGTON, VT
WATER RESOURCES
www.burlingtonvt.gov/dpw
802-863-4801

SERVICE LOCATION:	[REDACTED]
ACCOUNT NUMBER:	[REDACTED]
PREVIOUS BALANCE:	\$ 0.00
TOTAL CURRENT:	\$ 69.51
PLEASE PAY:	\$ 69.51

AMOUNT ENCLOSED: _____

BURLINGTON VT 05408-1203

10451500000 00000006951 4

Please return this stub with payment

ACCOUNT #: 10451500-00

USAGE INFORMATION

BILLING DATE		
7/30/2019		
USAGE PERIOD		
6/3/2019 - 7/1/2019		
METER READING IN CUBIC FEET		
PRESENT	PREVIOUS	USAGE
139900	139300	600
MONTHLY USAGE COMPARISON		
CUBIC FEET THIS YEAR	DAYS	
600	28	
CUBIC FEET LAST YEAR	DAYS	
500	32	
STORMWATER		
IMPERVIOUS SURFACE UNITS		
FLAT FEE		

SERVICE LOCATION: [REDACTED] HARDY AVE

SUMMARY OF CHARGES

WATER DUE	\$25.86
WASTEWATER DUE	\$34.92
STORMWATER DUE	\$6.60
FRANCHISE FEE	\$2.13
TOTAL CURRENT	\$69.51
PREVIOUS BALANCE	\$0.00
PLEASE PAY	\$69.51
DUE DATE	
8/28/2019	
PAYMENTS SINCE LAST BILLING:	\$48.55

Messages:

Rate Change: The water rate is increasing from \$4.31 to \$4.44 per 100 CF and the wastewater rate is increasing from \$5.82 to \$6.20 per 100 CF. This change is effective on 7/1/19 and will be reflected in your August bills. The increase is intended to ensure sufficient resources for our near and long term capital needs as well as continued improvements to the revenue assurance program which is vital for utility financial health.

Please make checks payable to DPW - Water Resources
Payment Mailing Address: P.O. Box 1758, Albany, NY 12201-1758
All Other Correspondence: P.O. Box 878, Burlington, VT 05402-0878
802-863-4501 (P) 802-864-8233 (F) www.burlingtonvt.gov/dpw/water





Figure 29: Burlington Combined Utility Bill with Stormwater, Sewer, and Water Fees


For electric charges in Burlington, below is a sample summer monthly bill:



See back for customer comment section and explanation of terms

Account Name: JANE DOE
Service Address: 1234 ABC ST #567
Thank you for your payment(s): \$18.50

Bill Date: 07/11/19



Meter Information
Reading Period: 06/08/19 to 07/08/19 **Days:** 30

Rate
RS

Customer ID
11089XX

Location ID
45XXX

Please Pay
\$18.73

KILOWATT HOURS

Summary of Charges

CUSTOMER CHARGE	87.00	X	\$0.108068	=	\$8.21
INITIAL BLOCK	87.00	X	\$0.009520	=	\$0.83
ENERGY EFF. CHG.-KWH					\$18.44
Total cost for electricity used					\$18.44
CITY FRANCHISE FEE 3.5%					\$0.29
Current Bill					\$18.73
Previous Balance					\$0.00
Please Pay by 08/08/19					\$18.73

Units
87.00

Questions?
Call us at:
(802) 865-7300

Hours: Mon. - Fri.,
8am - 5pm

Figure 30: City of Burlington Electric Bill

City of South Burlington

On average, a typical single-family household in South Burlington pays **annual** fees of approximately \$330.00 for Sewage, \$250.00 for Water, and \$80.00 for Stormwater services.

Conclusion

The estimated collection charges noted in the consolidated routing (Section 5) indicate an estimated solid waste, recycling and possibly food waste annual charge that could be expected compared to other contracted service in the region, and which is quite reasonable given the current charges for service, as well as the cities' other utility charges and the cost of collection service nationally.

GBB recommends that both Cities discuss the method of billing internally with the Department(s) which conducts the billing services in order to estimate the additional costs and identify any items which would impact the implementation of the billing by the Cities for waste and recyclables collection services. GBB would be able to assist with such discussions and provide guidance concerning the matter to ensure a better understanding of the needed billing services. The decision regarding billing by the haulers or by the cities would then be incorporated into a future contract process, should the cities decide to go toward consolidation.

The actual costs associated with the billing of residential units located within the City of Burlington and the City of South Burlington by contracted waste and recyclables collection companies is expected to represent a minimal amount of the estimated total collection costs, whether billing were done through the haulers or by the cities.

For potential hauler billing, this assumption is based on the below factors:

- The waste and recyclables collection companies currently servicing the Cities on a subscription basis already have in place billing systems, processes and personnel performing billing associated functions. Therefore, the need to expand these billing functions in order to bill all or a significant amount of the single-family residential units located within Cities would most likely be incurred only on a limited and incremental cost basis.
- It is also assumed that the waste and recyclables collection companies servicing the Cities on a subscription basis have accounts receivables procedures and processes in place to manage receipt of payments and pass due accounts. In addition, the presence of having a contract or contracts in place for the collection of waste and recyclables with the Cities would be expected to minimize the alternatives for such services by other companies for residential units who did not pay the contracted companies.

GBB received feedback from the haulers that they would prefer the cities to do billing. The actual costs associated with the billing of residential units located within the City of Burlington and the City of South Burlington by the Cities through their current billing system are difficult to estimate at this time without additional information concerning the system and the utilized processes.







7. Implementation Steps and Timeline

Next Step

The immediate next step is a presentation is made to the City Councils including input from the survey and the public meetings. The Councils will decide if they want to do further study, move forward on implementation, or end consideration.

Implementation Schedule

If a decision were reached to move forward on consolidated collection implementation for both cities, an additional 9-12 months of implementation assistance is outlined below to prepare technical and contract specifications to bid for services, evaluate the bids received, and make recommendations for award for each contract based on the qualifications of the bidders as well as the most favorable financial outcome. In addition, the cities may wish to contract for additional services to assist with the startup of the collection contracts in order to minimize any implementation and service difficulties during the initial thirty (30) days of the collection contracts.

Task #	Implementation Assistance: Task name	Current Project	Implementation Month #									
			1	2	3	4	5	6	7	8	9	10-12
	Feasibility Study completed											
	Presentations to City Councils (Decision: further study, implement or end consideration)											
Task 1	Task 1: Prepare technical and contract specifications to bid for services											
Task 2	Task 2: Release RFB and assist answering questions											
Task 3	Task 3: Receive and Evaluate the bids received											
Task 4	Task 4: Make recommendations for award for each contract; assist with contracting as necessary											

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Appendix I – Project Kickoff Trip Report Photos

On the following pages, please see the Project Kickoff Trip Report Photos.

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Appendix II – GHG Calculations for Consolidated Collection Scenarios

Consolidated Collections Scenario Calculations:

City of Burlington (Weekly Solid Waste Collection)

Scenario Assumptions:

Assumed number of miles travel per week by a fleet = 539 miles

Assumed number of miles travel per year by a fleet = 28,049 miles

Assumed number of trucks per fleet = 3

- Step 1: $.010180 \text{ metric tons CO}_2\text{E pgd} / 3.5 \text{ miles pgd} / .988 = 0.0029439 \text{ Metric tons CO}_2\text{E per truck per mile}$
- Step 2: $0.0029439 * 2,205 = 6.5 \text{ Pounds of CO}_2\text{E per truck per mile}$
- Step 3: $6.5 * 539 \text{ miles} = 3,501 \text{ Pounds of CO}_2\text{E per fleet per week}$
- Step 4: $6.5 * 28,049 \text{ miles} = 182,043 \text{ Total Pounds of CO}_2\text{E per fleet per year.}$

City of Burlington (Recycling Every Other Week Collection)

Scenario Assumptions:

Assumed number of miles travel per week by a fleet = 615 miles

Assumed number of miles travel per year by a fleet = 15,985 miles

Assumed number of trucks per fleet = 2

- Step 1: $.010180 \text{ metric tons CO}_2\text{E pgd} / 3.5 \text{ miles pgd} / .988 = 0.0029439 \text{ Metric tons CO}_2\text{E per truck per mile}$
- Step 2: $0.0029439 * 2,205 = 6.5 \text{ Pounds of CO}_2\text{E per truck per mile}$
- Step 3: $6.5 * 615 \text{ miles} = 3,990 \text{ Pounds of CO}_2\text{E per fleet per week}$
- Step 4: $6.5 * 15,985 \text{ miles} = 103,745 \text{ Pounds of CO}_2\text{E per fleet per year.}$

CITY OF SOUTH BURLINGTON (Weekly Solid Waste Collection)

Scenario Assumptions:

Assumed number of miles travel per week by a fleet = 314 miles

Assumed number of miles travel per year by a fleet = 16,336 miles

Assumed number of trucks per fleet = 2

- Step 1: $.010180 \text{ metric tons CO}_2\text{E pgd} / 3.5 \text{ miles pgd} / .988 = 0.0029439 \text{ Metric tons CO}_2\text{E per truck per mile}$
- Step 2: $0.0029439 * 2,205 = 6.5 \text{ Pounds of CO}_2\text{E per truck per mile}$
- Step 3: $6.5 * 314 \text{ miles} = 2,039 \text{ Pounds of CO}_2\text{E per fleet per week}$
- Step 4: $6.5 * 16,336 \text{ miles} = 106,021 \text{ Pounds of CO}_2\text{E per fleet per year.}$

CITY OF SOUTH BURLINGTON (Recycling Every Other Week Collection)

Scenario Assumptions:

Assumed number of miles travel per week by a fleet = 332 miles

Assumed number of miles travel per year by a fleet = 8,632 miles

Assumed number of trucks per fleet = 2

- Step 1: $.010180 \text{ metric tons CO}_2\text{E pgd} / 3.5 \text{ miles pgd} / .988 = 0.0029439 \text{ Metric tons CO}_2\text{E per truck per mile}$
- Step 2: $0.0029439 * 2,205 = 6.5 \text{ Pounds of CO}_2\text{E per truck per mile}$
- Step 3: $6.5 * 332 \text{ miles} = 2,155 \text{ Pounds of CO}_2\text{E per fleet per week}$
- Step 4: $6.5 * 8,632 \text{ miles} = 56,023 \text{ Pounds of CO}_2\text{E per fleet per year.}$

Appendix III – ShapardResearch Project Survey Results (full): City of Burlington

On the following pages please see the full survey results from ShapardResearch for the City of Burlington.

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Appendix IV – ShapardResearch Project Survey Results (full): City of South Burlington

On the Following pages please see the full survey results from ShapardResearch for the City of South Burlington.

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Appendix V – C2 Logix Routing Scenario file: City of Burlington

On the Following pages please see the full Routing Scenario files from C2Logix for the City of Burlington.

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Appendix VI – C2 Logix Routing Scenario file: City of South Burlington

On the following pages please see the full Routing Scenario files from C2Logix for the City of South Burlington.

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Appendix VII - Addendum Documenting Discussions at Public Meetings and City Council Meetings (*forthcoming*)

DRAFT

(Forthcoming)

A special ***“Thank you!”*** to:

THE CITY
OF BURLINGTON



southburlington
VERMONT



**SOLID WASTE
MANAGEMENT
CONSULTANTS**

Gershman, Brickner & Bratton, Inc.
2010 Corporate Ridge
Suite 510
McLean, Virginia 22102
703-573-5800
www.gbbinc.com